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ORIGINAL ARTICLES.

PUERPERAL FEVER; ITS PROPHYLAXIS AND TREATMENT.

Read in the Section on Obstetrics and Diseases of Women, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5–8, 1896.

BY E. E. MONTGOMERY, M.D.

PHILADELPHIA, PA.

The mysterious condition known as puerperal fever has been a prolific theme for discussion. Its insidious character, its multiple lesions and its grave mortality sometimes depopulating lying-in hospitals or causing the death of every parturient women in a district, have naturally directed interest to its study.

When we review the conflicting theories as to its genesis we find they may be resolved into two views; the one, the more simple and concrete, but less satisfactory, which seeks to associate the disease with the discovered anatomic lesion. With the development of the anatomy the distinction of the lesions has become more delicate and is limited to the tissues, as peritonitis, adenitis and the various abscesses of the pelvis. This is the localization theory. The other theory is that known as the essential doctrine, that the disease is due to some special miasm or infectious poison from which has been evolved the microbic etiology.

The repetition of cases of similar character in the same institution, or the same district naturally led to the recognition that it was an infectious disease and to the supposition that it was due to a special miasm. The specific identity of this poison was ably championed by Fordyce Barker, who claimed that puerperal fever was a distinct disease.

The researches of Pasteur rendered it probable that it was due to the presence of microörganisms which were conveyed to the victim by contact, through the atmosphere, or had developed as ferments in her body. Siredey as early as 1875 determined the absolute similarity between surgical and puerperal infections, and further asserted that puerperal peritonitis was secondary to a uterine lymphangitis. The continuous association of certain forms of bacteria in the uterine discharges of puerperal fever, the ability to develop similar septic conditions in the male by the injection of these organisms or their products, demonstrate the certainty of their baneful influence. Bumm, as a result of his researches into the microörganisms of puerperal sepsis accepts two forms of infection; 1, putrid infection, produced by retained portions of placenta, decidua or blood clots infected by the saprophytes, various bacilli and cocci, developing a condition know as sapremia; 2, the septic form, the result of the presence of the pyogenes, the streptococcus and staphylococcus. Widal claims to have seen a fatal case of puerperal suppuration which was apparently due to the bacterium coli.

The investigations of Doleris have demonstrated the identity of the streptococcus of erysipelas with that which results in puerperal fever, or sepsis. Careful investigation no longer leaves a doubt that the puerperal inflammation is induced by a streptococcus identical in its characteristics with the streptococcus of erysipelas and the pyogenes. It can not be denied that inflammation of a less intensity may develop from infection by the staphylococcus. Some cases of peritonitis and puerperal lymphangitis are undoubtedly produced by the bacilli of putrefaction. Rarely the bacillus coli communis may engender a suppurative peritonitis. The process of infection is greatly facilitated by obstetric traumatisms, the existence of previous attacks of gonorrhea, and the presence of bacilli in the vagina.

The streptococcus conveyed to the patient by the finger of the physician, or nurse, or by instrumental manipulation during or following labor, makes its habitat in the debris of the mucous membrane, in the lymphatic fluid and blood clots at the situation of the placenta, in the material which forms the lochia, or vaginal discharge following parturition. The canals of mucous glands, tears of the cervix, vagina and vulva afford opportunity for further development; without producing marked effect upon the uterine or tubal surfaces the infection may pass through these organs and produce violent and dangerous infective processes in the ovaries or peritoneal cavity. The writer has seen one case in which there was developed an abscess of the ovary without any uterine or tubal complication. In this case, the uterus and tube afforded access of infection to an ovary which was probably rendered more vulnerable by the existence within it of the corpus luteum of pregnancy. The infection proceeds by continuous extension through the Fallopian tubes to the peritoneal cavity, but in addition it extends through the lymphatics and blood vessels. The multiplication of germs results in the formation of ptomain or toxin products. The increase of the toxin results in irritation, swelling, congestion and the exudation of liquid plasma into the cellular tissue. The presence and multiplication of the germs results in the destruction of the vitality of the infected tissue, the necrosis in mass of large layers of tissue, producing a superficial acute gangrene, or pseudo-diphtheria. The condition is always pus-producing and septic.

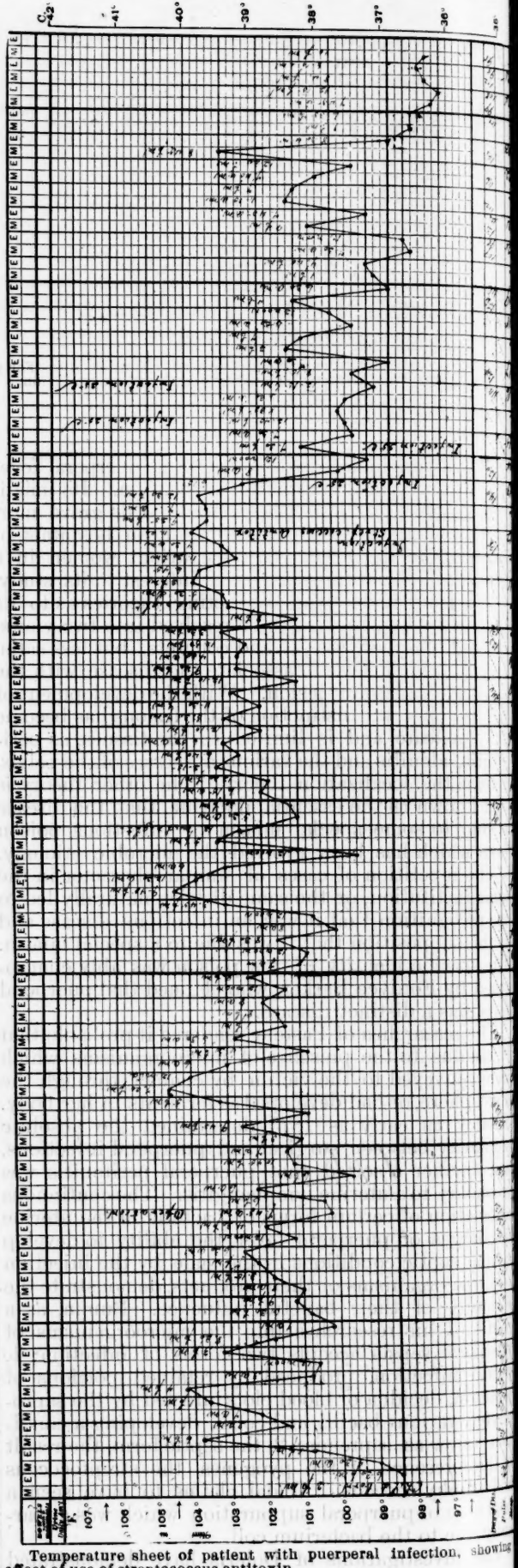
Clinically we find the disease varies in different patients. This is due to the varying immunity to the microörganisms. The varying power of resistance in different individuals produces different types. These have been resolved into three: first, inflammation, and local suppuration; second, inflammation and migratory suppuration, and third, hypertoxic infection without suppuration. The point of infection varies in labor and abortion. In the latter, the placental site, and erosions of the cervix will generally be the avenue through which the infection has found

entrance, while in the former entrance may be provided by lesions of the vulva, as lacerations of the fourchette, lateral wall, or anterior commissure, an injury of the duct of Bartholin, adenitis, lacerations of the vagina, laceration or desquamation of the cervix by the fetal head. The previous conditions of the tube may render puerperal infection certain, or displacement of the uterus, presenting an obstruction to drainage, may present a favorable soil for infection. The combat between the invading infection and the powers of resistance in the patient may result in the limitation of the disease to local inflammation or suppuration occurring in abscess in the labium, cellular tissue of the pelvis, wall of the uterus, or in the Fallopian tube. Barriers of limitation are provided, immunity against farther invasion is early secured. Second, the inflammatory processes result in migration of the inflammation; sometimes exclusively by way of the mucous lining of the tube to the peritoneum, which is rare, or it extends from without inward, resting upon the external layer, or it may be mixed, involving the mucous membrane, the blood vessels and the lymphatics. Migration by the mucous membrane exclusively, will produce a puerperal salpingitis, by the external part a phlebitis, while the mixed migration results in a multiplicity of lesions. In some cases, the entrance of infection is so rapid, and the power of resistance so slight, that a toxemia results, which produces a rapidly fatal termination with slight or no indications of the formation of pus.

The fatal termination in puerperal infection may be occasioned by profound organic vices anterior to the confinement, which render the power of resistance faulty. Second, by a regular progression of the lesion, and invasion of its economy by the poison, continually augmented in quantity and toxicity. Here there is a struggle and the forces of nature are finally beaten down. Third, the virulent character of the toxic force results in a paralysis of the nerve forces. Here the multiplicity of the microörganisms is at the maximum, with minimum resistance.

Treatment.—The first and most important consideration in treatment is prophylaxis. With a correct knowledge of the source of danger, we are the better prepared to meet or avoid it. As the contagion in the majority of cases is conveyed by contact, scrupulous aseptic or antiseptic precautions should be preserved. The nearer the measures of the careful surgeon can be imitated and practiced, the less will be the danger to the patient. The physician in general practice who is in attendance upon sepsis or erysipelas can not be too rigid in his measures of preparation; indeed, it is a serious question whether he should go from a virulently infected patient, whether it be with sepsis or erysipelas, to the lying-in chamber. During the writer's term as resident physician in the Philadelphia Hospital in 1875, he went from the surgical ward, where he was in attendance upon cases of erysipelas, to the obstetric department; no special precaution outside of cleanliness of hands and person was practiced. An epidemic of puerperal sepsis developed, in which twenty patients became seriously sick, and four lost their lives.

The measures particularly to be practiced are the removal of the coat, baring of arms to the elbows, careful washing of the hands with soap and hot water, with diligent use of the nail brush, hands should be immersed in 1 to 500 bichlorid and subsequently in



Temperature sheet of patient with puerperal infection, showing effect of use of streptococcus antitoxin.

alcohol. The bedding and personal clothing of the patient should be clean, the vulva should be washed with soap and hot water, the bowel emptied by an enema and an antiseptic douche given. Digital vaginal exploration should be infrequent and only after careful disinfection of the hands. Instruments should be sterilized by boiling. Long continued manipulation, instrumental delivery or manual delivery of the placenta, should be followed by antiseptic intrauterine irrigation.

The parts should be carefully cleansed subsequent to delivery, the placenta carefully observed to make sure no portion remains, and the uterus should be left firm and well contracted. Laceration of the vagina and vulva, unless the tissues are bruised or the vitality destroyed by long continued instrumental delivery, should be at once sutured; excoriations may be cauterized by carbolic acid. The vulva should be covered with an antiseptic pad which should be changed as frequently as it becomes soiled. With each changing, the vulva should be cleansed with an antiseptic solution. Aside from the immediate postpartum irrigation mentioned, intrauterine or vaginal douching should not be practiced.

But physicians will reply that they have attended large numbers of confinement cases without such precautions and no bad results have followed. This may be true. With ordinary precautions the chances are favorable, and much depends upon the condition of the patient. Not every patient, fortunately, to whom contagion is conveyed, yields to its influence. The normal secretions of the vagina are unfavorable for germ culture. The tract is irrigated by discharge of the liquor amnii and swept clear by the passage of the fetus. Many eminent obstetricians, among whom may be named Lusk, are content to depend upon these conditions in ordinary cases; still, the preliminary douching does not seem useless.

Treatment of *infection* may be considered as, first, maintenance of the powers of resistance; second, production of immunity; and third, the resort to surgical procedures for relief of local manifestations. This classification of treatment has reference to septic conditions. Sapremia or putrid intoxication is relieved by removal of the decomposing placenta, portion of membrane or blood-clot, and subsequent irrigation and drainage. The diagnosis is determined by the character of the lochia and the digital exploration of the uterine cavity. Decreased or absent lochia, elevation of temperature, rapid pulse, depressed, anxious countenance, should betoken the suspicion of beginning sepsis. It may or may not be accompanied by local tenderness. Exploration of the uterine cavity reveals a smooth surface, which should confirm the diagnosis. The rapidity with which the vital forces are depressed contraindicates the use of depleting agents, unless it be the moderate use of purgatives to aid in elimination. Early resort should be made to the use of tonics, stimulants and easily assimilated and nourishing food. The most efficient stimulant will be found in strychnin, which should be given for effect, and may be administered hypodermically in doses of gr. 1-15 every two or three hours, where there is much depression. Opium, morphin and antipyretics should be given with great circumspection. For the control of temperature, cold sponging or the cold pack should be practiced. Pain, whenever possible, should be relieved by the ice bag. The natural tendency of disease germs is to develop toxins which are toxic to themselves, and render the individual immune to further ravages. The better the nutrition, the more the strength is sustained, the earlier immunity will be secured. In many cases, however, the progress of infection is so rapid, the intoxication so profound, that the patient can not survive until immunity has become established. As we can not foretell in any individual the virulence of the infection, nor the possible powers of resistance, the use of an antitoxin should be considered as indicated wherever infection is recognized. This is best given by hypodermic injection. These injections of streptococcus antitoxin should be given in doses of 25 c.c. once daily for four days. They may be made into the cellular tissue of the abdominal wall, or into the buttocks or thighs. Of course, every precaution must be practiced to render their use aseptic.

Bacteriologic study should be made of the secretions, but as the large majority of septic troubles arise from the presence of the streptococcus, valuable time may be saved by immediate use of the antitoxin.

The following history is of interest: A young woman gave birth to a child February 18, at 6:30 P.M. Twenty-four hours later her temperature was 103.8 degrees, pulse 130, the next evening 104.2 degrees. Her husband at the time was suffering from numerous boils, and her physician, the day following her confinement, developed an onychia of the right index finger. The writer saw her upon the sixth day, when her temperature was nearly 102 degrees; the uterus was large, situated to the left side, quite tender, and vaginal examination disclosed some induration in the left broad ligament. The vagina was inflamed and filled with thick muco-purulent material with no especial odor. The vagina was carefully irrigated and scrubbed, the uterine cavity cleansed and packed with iodoform gauze, an opening made into Douglas' pouch, some flakes of lymph removed by irrigation and a gauze drain inserted. Her symptoms improved for two days, and then became aggravated. An erysipelatous blush was noticed extending from the vagina to the buttocks, and the vulva much swollen. This extended in a wave-like course until the entire body became involved. March 11, over three weeks from her confinement, the temperature had been but twice below 100 degrees and now was nearly 104 degrees, with a renewal of the erysipelas at the vulva. The antitoxin was now begun and given daily for five days after the first dose, and the temperature subsided and convalescence was subsequently uninterrupted.

Surgical Measures.—Curettement is advised early. If the condition is due to putrid intoxication this procedure, followed by irrigation and drainage, will give prompt relief. In streptococcus infection the germs are imbedded in the mucous membrane, sinuses and wall of the uterus, so that a curettement would not accomplish their complete removal, and affords more surface for ptomain absorption. Hysterectomy has been advocated, but it is a question whether in this form of infection the tissues have not been invaded to such a degree that the removal of the uterus would be ineffectual. The first aim should be the establishment of immunity, then local manifestations should be treated as they make their appearance with the assurance that farther spread will be avoided.

Let us have a Department of Public Health!

PUERPERAL INFECTION; ITS PATHOLOGY, PREVENTION AND TREATMENT.

Read in the Section on Obstetrics and Diseases of Women at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

BY R. R. KIME, M.D.

ATLANTA, GA.

The term "puerperal fever" should be abandoned, as it is too broad and includes conditions which are not peculiar to the puerperal state, hence misleading.

Puerperal septicemia as used by many is also objectionable; it should be limited in its application and used only to indicate cases of true septicemia. Textbooks and lexicons define "puerperal fever" as an acute infectious disease due to septic inoculation. Some authorities apologize for the definition, and well they may under the present light and knowledge of these conditions.

In writing upon this subject, some five years since, for the Tri-State Medical Association I endeavored to demonstrate the existence of two general classes of puerperal infection. Such a view then met with strong opposition and some of our best authorities wrote me such a distinction could not be maintained. To-day I am more fully convinced than ever that we have a septic and a putrid infection occurring during the puerperal state and that they can be distinguished bacteriologically, pathologically and clinically. We may have cases of mixed infection, as in other diseases, but that does not justify the wholesale grouping of all these cases under the cloak of septicemia as is done by many authorities, even at the present time. As our knowledge of puerperal infection becomes more accurate, our bacteriologic demonstrations more definite and our clinical histories more minute, we will find the distinction between *putrid* and *septic* infection broadens in the same proportion.

Putrid infection, or sapremia, is due to the absorption of ptomains developed by putrefactive bacteria or saprophytes; the bacilli remain localized in the dead tissue; the alkaloid, being absorbed, produces constitutional symptoms in proportion to the amount imbibed, is not contagious nor inoculable from case to case, except where foreign substances are retained in the uterus. Putrid infection can not graft itself in healthy tissue, foreign or dead tissue must exist as a nidus for its development.

Septic infection or septicemia is due to invasion of septic germs producing constitutional and local disturbances by their presence and invasion of new tissue with absorption of leucomains, their alkaloidal development. They enter living tissues; migrate from point to point, entering the circulation; are highly contagious and inoculable from case to case. Streptococci are said to travel one centimeter[1] per hour, penetrate the tissues and spread by the lymphatics and blood vessels. A variety of germs are capable of producing septic infection; among the most frequent are the streptococci and staphylococci. The infection may be local, affecting the endometrium (Bumm), extending, may involve the lymphatics (lymphangitis) or the venous channels (thrombo-phlebitis) with various complications and general systemic infection. It is here we may have the much-talked of pelvic cellulitis, with or without abscess formation, salpingitis with or without pyosalpinx, pelvic peritonitis and even general peritonitis, while the thrombo-phlebitic variety may result in multiple abscesses in the uterine wall.

[1] J. W. Williams, M.D., Amer. Jour., Obs., February, 1896.

Prevention of puerperal infection is accomplished by strict asepsis in obstetric practice, as well as thorough emptying the uterus and securing proper contractions with repair of lacerations. All recognize the necessity of strict cleanliness of physician, nurse, patient, bedding and everything that comes in contact with the patient. We do not desire to sing the old song of "antiseptics in obstetric practice," but for the sake of suffering women desire to urge the necessity of *strict asepsis* and often of disinfection. Even after the physician's hands have been scrubbed with soap, warm water and brush the application of ammonia, solutions in proper strength of creolin, lysol, carbolic acid or mercuric chlorid can do no harm and will often add to the safety of the patient. The patient should have a warm bath, vulval region washed with soap and warm water and a disinfectant will add to her safety. She should be dressed in clean clothing suited to the occasion, placed in a clean bed properly arranged, bowels moved and bladder emptied, then she is ready for labor.

As to use of the antepartum douche there is a difference of opinion, which has been well presented by Charles Jewett, M.D. (April issue *American Gynecological and Obs. Journal*). He states that the statistics at the Dresden Clinic (Leopold) show that of 5,784 cases douched, 82 per cent. were free from fever; of 4,088 cases not douched, 94.8 per cent. were free from fever, which goes far to establish the claim that the antepartum douche is useless and it should not be used, especially in private practice, except for cause. In hospital practice among the lower classes there is greater necessity for its use. If diseased conditions be present, indicated by a "yellowish, greenish or fetid discharge, especially of excoriating character," then prophylactic vaginal disinfection is required. Unless such conditions be present nature's protective, lubricating, disinfecting vaginal secretion is too important a factor in labor to be interfered with.

Postpartum douches, as a rule, are to be condemned as useless and frequently injurious, by exposing the patient unnecessarily and increasing the risk of infection.

After labor cleanse the patient externally with an antiseptic solution and apply antiseptic vulval pad. The antiseptic pad properly applied and attended to, adds to the comfort and safety of the patient, lessening the risk of infection, especially if any cough be present. The vulval region should be cleansed two or three times a day with 1 per cent. solution creolin, lysol, 3 per cent. carbolic acid, 1 in 2,000 mercuric chlorid or saturated solution of boric acid. As few vaginal examinations as possible should be made. The patient, unless some special contraindication exists, should be lifted up over a vessel in bed for the bowels to move or kidneys to act, thus favoring vaginal drainage. The thorough emptying of uterus and securing proper contractions of the same are preventive measures of great importance, as the presence of placental tissue, membranes, blood clots, etc., is an inviting field for germ development and essential for putrid infection. The repair of lacerations, especially of perineum, should not be overlooked, as such repair closes raw surfaces and closes avenues for infection.

The treatment of puerperal infection is a subject of grave importance and especially so at the present time, when hysterectomy and abdominal section for these conditions seem to be a fad. I am confident that a far greater number of cases of infection occur

than the general profession are willing to admit and that many cases of mild infection are overlooked or attributed to other causes; severer forms are treated as other diseases and when the patent dies the death certificate reads typhoid fever, malaria, inflammation of bowels, etc. The recorded deaths do not represent the actual number, much less the vast number of cases of infection that either recover or go through life maimed.

If the obstetrician could follow up his work closely he would frequently find results of infection which he had overlooked or attributed to other causes, but his services usually cease with the puerperal period and later the patient seeks the specialist for advice and he frequently finds results due to infection after labor or abortion.

Drainage is the most essential factor in the treatment of puerperal infection. It is a process of elimination from the uterine cavity, alimentary canal and abscess cavities by tubular or capillary drainage and cathartics. For uterine drainage the tubular form is the best, and salines for alimentary drainage. During pregnancy we have a hyperplasia of tissue with consequent increased vascularity of the generative organs, which must be reduced after the uterus is emptied by a process of retrograde tissue metamorphosis requiring great activity of the lymphatics. This process, with an open placental site, accompanied by the traumatisms of labor render the parts very vulnerable to the entrance of germs and absorption of toxic principles. We have as a natural result of labor or as an acquired pathologic result a discharge from the uterine cavity, following delivery, in which nature throws off waste material by a process of elimination or drainage. This discharge contains cellular elements of the blood, leucocytes and other débris which can not be drained off by gauze. We tampon with gauze to check hemorrhage and wall off septic material in abdominal work. Shall we tampon the uterus with gauze, checking nature's process of elimination, choking up nature's channels with débris and dead leucocytes ladened with septic germs, by placing an impenetrable barrier in the way of their exit, or shall we imitate nature and give free egress to all noxious material? Does the successful surgeon tampon a large abscess cavity with a small opening with gauze alone, especially where there is a septic process and necrotic tissue? As a rule, abscess cavities have a protective wall around them which lessens dangers of absorption, thus favoring the use of gauze, but not so in septic infection. Large opening and free drainage is the rule in surgery. In puerperal infection one can not secure a large opening or free drainage with gauze tampon. Again the dangers of gauze packings are very greatly increased by curetting off the endometrium, especially in septic infection. The curette should rarely, if ever, be used in septic infection; it is too dangerous and deleterious in its results.

Frequently we hear physicians say, "I curetted, disinfected and tamponed yet the patient died"; and it might be added as a result of the treatment. If a curette is used at all it should be a large dull one and used simply to hook up tissue which, as a rule, can be more readily removed by forceps, and not used with a view of removing endometrium or even adherent tissues, as is done by some. In putrid infection the curette can be used vigorously, the uterus tamponed and yet the patient recover regardless of the treatment; but nature is not so well able to overcome such treatment in septic infection, and it is frequently a method of manufacturing cases for hysterectomy.

These remarks are applied to cases of infection after labor and not cases of abortion prior to the fourth month. Infection after incomplete abortion, in the majority of instances, are typical cases of putrid infection and easily relieved by the curette, disinfection and tampon, because we have different conditions to deal with.

To make a clinical distinction and give separate treatment for putrid and septic infection would make this paper too lengthy, so we will briefly consider them collectively.

As soon as puerperal infection is diagnosed, irrigate the uterine cavity with a disinfectant fluid, then remove any foreign substances that are present by a method least likely to injure the endometrium and best suited to the individual case and dexterity of the operator, then irrigate freely again. If much hemorrhage, irrigate with very hot water containing comp. tr. iodin or alum; never tampon except for serious hemorrhage, but introduce as large-sized drainage tube as cervix will admit. Soft rubber tubing is as efficient as any and may be used in the form of a † or loop with perforations in the uterus, and the T or free ends of loop left in the vagina, which ends should also be perforated to allow free egress.

If capillary drainage is also desired a strip of gauze can also be carried up into the uterus by the side of the drainage tube with free end left in the vagina or, if desired, may be carried out to antiseptic vulval pad, but I prefer at this time to dispense with the pad, using a pledget of absorbent cotton, so as not to obstruct drainage. The end of the strip of gauze in the uterine cavity may be saturated with pure camphorated phenol before introduction, so as to prolong disinfection of the uterine contents and is far better than any suppository for such purpose. Boric acid, pure, may be also carried into the uterus on the gauze, and a tablespoonful left in the vagina is efficient. Drainage tube should be removed once or twice in twenty-four hours, uterus irrigated with disinfectant solution, *not too strong*; carbolic acid, boric acid and creolin are best. If uterus is relaxed or there is hemorrhage, a solution of compound tincture iodin should be used. It may be added to carbolic solution. Weak solutions should be used, as strong ones will interfere with nature's process of repair. If the tube is removed but once a day a vaginal douche should be used midway between times. The drainage should be continued until patient has fully recovered. At commencement salines should be given to produce free catharsis, thus eliminating poison, relieving pelvic hyperemia and abdominal distension and pressure.

The combined use of drainage tube and salines will control temperature far better than antipyretics and relieve pain better than opiates, beside they are curative by relieving the cause and more permanent in results. The coal tar derivatives, as antipyretics and opiates for pain, only combat symptoms, depress the patient, interfere with elimination of effete material, assimilation of food and obscure symptoms; in short, injure more patients than they benefit. They should never be used except in extreme cases of high temperature or severe pain as a palliative measure until other treatment can be instituted. Sulphonal is the best soporific. Viburnum and the bromids act well in some cases. Quinin in ten grain doses at four hours' intervals at first, later in smaller doses, is efficient in

checking germ development, counteracting toxic principles, sustaining vitality of the patient and controlling the tendency to chills. Strychnia given every four hours, combined with pepsin, disinfectants and bitter tonics best suited to the individual case, are essential as well as good nourishing diet given systematically. In debilitated cases stimulants are needed and frequently artificial foods will be required to keep up the vitality of the patient. Of these I have found beef peptonoids, panopeptones and malted milk most reliable. After acute symptoms have subsided some of the most assimilable forms of iron are beneficial. Frequent alcoholic baths with or without quinin are useful in tranquilizing the patient, stimulating cutaneous surfaces and checking profuse perspiration.

If the above outlines of treatment with the efficient, systematic, persistent use of the drainage tube are carried out, surgical measures will rarely be required in puerperal infection. I found from inquiry of eighteen leading gynecologists and obstetricians, five were opposed and thirteen in favor of hysterectomy for puerperal infection. Of fifteen cases reported by them up to that time, eight died, making a death rate of $53\frac{1}{3}$ per cent. The advocates of hysterectomy advise it for disease limited to the uterine body, such as septic metritis, multiple abscesses in uterine wall, uterine thrombo-phlebitis and gangrene of uterus. The diagnosis of such limitation of septic processes is very difficult and mistakes are frequent, with disastrous results. In a majority of cases of septic infection the septic process has extended beyond the uterus, involving other tissues with systemic infection which can not be reached by hysterectomy, but when it is local such an operation is indicated. Most gynecologists that favor hysterectomy advise to curette and tampon the uterus, and if the patient does not improve or grows worse, then remove the uterus. With them it is not a question of diagnosis, but a failure of a certain line of treatment to give relief, which indicates hysterectomy, and that line of treatment frequently creates the demand for the operation in cases of *septic infection*. Pus accumulations in the pelvis can frequently be relieved by vaginal drainage, as advised by Dr. Henrotin of Chicago, thus saving lives that would be sacrificed by more heroic measures. Pyosalpinx, ovarian abscess, etc., the secondary localized results of infection, should be dealt with on the same principle as when produced by other causes.

In conclusion, I again emphasize the fact that use of the drainage tube, with treatment as outlined above, will save more patients than all surgical measures combined; and more important, the uterus, tubes and ovaries will be preserved for future usefulness and the surgeon's conscience left more at ease.

GONORRHEA IN THE PUERPERIUM.

Read in the Section on Obstetrics and Diseases of Women, at the Forty-Seventh Annual Meeting of the American Medical Association at Atlanta, Georgia, May 5-8, 1896.

BY ALBERT H. BURR, M.D.

ATTENDING PHYSICIAN PROVIDENT HOSPITAL.
CHICAGO.

In these latter days of widespread knowledge of aseptic measures for shielding the parturient woman from harm, the occurrence of puerperal sepsis is looked upon, even by the laity, as evidence that some one has blundered, and the attendant is fortunate if he escapes the charge of criminal negligence or inexcusable ignorance. If the infection of the lying-in woman happened only during labor, or her subsequent stay in childbed, the charge might be sustained with justice, but we are convinced that it happens more frequently than is apprehended that an infection has antedated childbed by weeks or months, if indeed it has not preceded conception itself and invaded territory absolutely beyond the reach of any possible antiseptic treatment.

With a unilateral pyosalpinx, or a tubal infection, existing before pregnancy, or a subsequent gonorrheal infection of vulvo-vaginal glands or urethra, who can be certain, even though forewarned, that he can be effectually forearmed against such dangerous and hidden foes?

I confess to a feeling of insecurity in every approaching case of confinement where I know beforehand, or have reason to suspect, the existence of gonorrheal infection, either active or latent. In an obstetric experience of five hundred cases I have had three fatalities, each of which is directly traceable to gonorrhea. In many of the remaining cases of puerperal sepsis, more or less severe, I have found by clinical history or by microscopic verification, the presence of a gonorrheal infection. An epitome of the

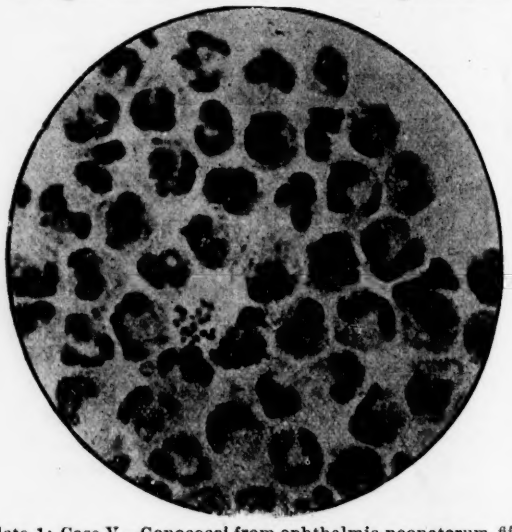


Plate 1; Case V.—Gonococci from ophthalmia neonatorum, fifth day after birth.

fatal cases, with a few added cases of non-fatal sepsis, culled for their instructive features, may serve to emphasize dangers too often ignored by the unwary. Moreover, it may comfort the troubled soul of some good brother who, believing he has neglected no reasonable precaution for the safety of his patient, has met with disaster where it was least expected. It may enable him in the future to trace the offending cause and place the responsibility where it rightfully belongs.

Case 1.—Elizabeth B., single, aged 20; French Canadian; primipara of vigorous physique, progressed in labor without incident until the separation and expulsion of the placenta brought with it a gush of most offensive fluid, the stench of which drove other attendants from the chamber. No odor was present at the rupture of the amnion. Nothing abnormal was apparent in the secundines. The child was robust. Here was a case of encysted septic material behind the placental attachment which no possible foresight or treatment could have reached in preparation for an aseptic confinement. Thorough infection of the whole placental site and of the parturient canal with a most deadly poison was instantaneous and inevitable. Peritonitis developed in thirty-six hours and ran its distressing and fatal course in less than a week, despite antiseptic uterine irrigations and other recognized treatment. In the absence of an autopsy the only logical conclusion is that the location of the decidua over the cornua had converted an

infected tube into a closed sack which discharged its saprophytic contents into the uterus when the detachment of the placenta had freed its uterine orifice. The vocation of the woman makes gonorrhea the most probable cause of a pyosalpinx.

Case 2.—Emma M., aged 20 years; German; married ten months; remarkably strong in physique; consulted me soon after marriage for metrorrhagia. Examination revealed an acute vaginitis, characteristic of gonorrhea. Subsequent examination of the husband showed an acute urethritis. These symptoms in the wife yielded promptly to treatment and pregnancy soon put an end to metrorrhagia. Both husband and wife, however, had recurrent attacks of sub-acute gonorrhea during the wife's pregnancy. Confinement was normal, on March 12, 1888. Antiseptic vaginal irrigation was practiced for several days. No untoward symptoms resulted until March 20, the eighth day, when a severe chill occurred followed by high fever, but without pelvic symptoms which never became a factor throughout her fatal illness. General systemic intoxication, however, persisted to a high degree. Knowing the previous history, uterine irrigation was practiced twice daily. On March 24 temperature suddenly arose to 108 degrees, which was quickly reduced by cold packs and antipyrin. Dr. H. W. Byford saw the case in consultation the following day and curetted for diagnostic purposes, with negative results. March 30 temperature reached 108.5 degrees with delirium and typhoid state, severe arthritis of shoulder and hip joint, followed with temperature of 103 to 104 degrees, till fatal termination April 5, on the seventeenth day of fever

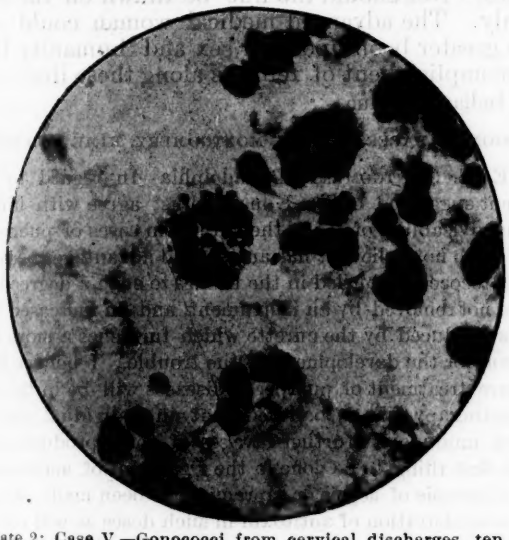


Plate 2; Case V.—Gonococci from cervical discharges, ten weeks after childbirth. Subinvolution.

and twenty-fourth day from confinement. The good health of the patient at childbirth, the sudden onset of high fever, the absence of bowel symptoms, exclude typhoid fever. My distinguished consultant concurred with me that gonorrheal infection was the most probable direct or indirect cause in this most singularly virulent case.

Case 3.—Luella B., American, single, aged 18, consulted me because she had not menstruated for several months. Under a suspicion of pregnancy an examination was obtained, revealing a four months' pregnancy and an acute vaginitis, believed to be gonorrheal. The case was lost sight of until summoned to her confinement. Labor was normal in all respects. On the fourth day there was a chill followed by high fever from an acute metritis. This was controlled after two or three days and patient was dismissed on the eighth day. In one week there was a recurrence of symptoms which again responded to treatment as before. Patient was about the house again when she had a second recurrence, under the care of another physician, and died, as I learned, one month after childbirth.

The following three cases of puerperal sepsis are interesting on account of microscopic verifications.

Case 4.—Ida H., four months married, was delivered at full term by a midwife. On the fifth day after the confinement I found her with a temperature of 105 degrees and an acute arthritis of hip joints with immobility of lower extremities. The child was suffering from acute ophthalmia. The pus, from which a slide was prepared, showed the gonoccocus in abundance. The father acknowledged having had gonorrhea a few months before marriage. Mother and child made a good though tedious recovery under appropriate treatment.

Case 5.—Mrs. Ida T., age 21; ten months married. Labor normal. On the fifth day child developed ophthalmia of gonorrheal infection. (See plate I.) The condition was at once explained to the father, who stated that he had an attack of gonorrhea four months before marriage, but considered himself cured at the time he wedded his wife. He remembered having had some gleet (?) afterward. On the seventh day the mother had a chill with fever and acute arthritis of shoulder joint of right side. As pelvic symptoms were absent, no irrigations were given. Mother and child were discharged convalescent on the twelfth day. Ten weeks later the mother came to my office suffering from sub-involution. Microscopic examination of cervical discharges showed gonococci. (See plate II.) Case yielded promptly to treatment.

Case 6.—Mrs. Amelia S., age 26, primipara, was well advanced in second stage of labor when seen for the first time. Labor terminated without incident. Child developed gonorrheal ophthalmia on the fifth day. (See plate III.) On the tenth day the mother was dismissed, after a good recovery, much to the relief of an anxious medical attendant. Two days later an urgent call in the early hours of morning cut short my slumber and dispelled my sense of security. Patient had a violent chill in the night, followed by high fever, with acute metritis and pelvic pain reflected to the diaphragm, causing dyspnea and a sense of suffocation. Before making intra-uterine irrigation a slide from the cervical discharge was obtained and the inevitable coccus came to light. (See plate

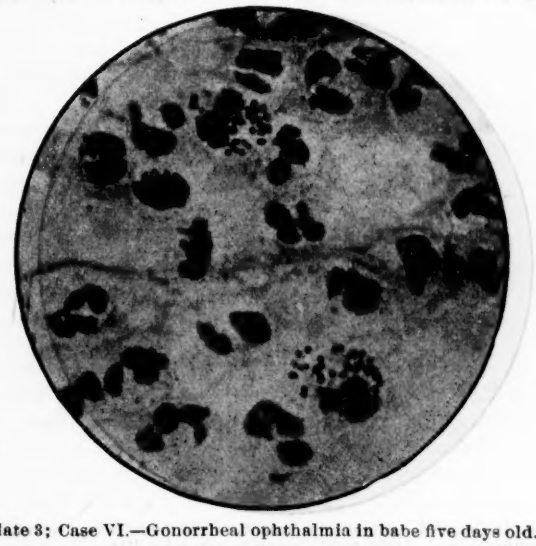


Plate 3; Case VI.—Gonorrheal ophthalmia in babe five days old.

IV.) The husband being an actor an investigation behind the scenes was undertaken, disclosing a history of infection a few weeks before the confinement of his wife, whom he unfortunately infected also before he was aware of his own condition. This complication was almost a fatal experience, but finally yielded and the mother was again convalescent in one month. The ophthalmia in the child was also quite obstinate for some time, though daily applications of silver solution, grains xxx to the ounce, was faithfully and thoroughly applied with brush to the whole conjunctival sack.

This list of well determined gonorrheal sepsis in childbed could be extended, but enough has been detailed to serve our purpose.

To summarize: All the above cases were primiparæ much above the average in physique and general good health. Their delivery was without complication or instrumental interference. All necessary examinations or manipulations were guarded against sepsis. In no case was there more than the usual slight laceration. In all, the presence of gonorrhea is closely proven except in case 1, where the tubal abscess is believed to have been the result of a gonorrheal infection previous to conception. Three of the cases developed rheumatoid arthritis during the pyrexia. This is a well known complication due to systemic infections of the gonorrheal germs or their ptomains.

No doubt exists in my mind from the evidence in the cases above enumerated and others which I could add to the number, that the microscope and other means of investigation as to the gonorrheal infection would clear up the etiology of many septic complications and fatalities in childbed. These unnecessary woes too frequently attendant on motherhood, and the sad lessons taught on the tables of our gynecologists, take away the bliss of ignorance from our profession and add to our knowledge the responsibility and imperative duty of vigilant measures for prophylaxis. Every case of gonorrhea in the male should be treated as a matter of serious import, for even though it may seem trivial to him, it may blight the lives of those to whom he may and probably will transmit the disease. Who of us having daughters do not look with apprehension as to their future health and safety in the relation of wives and mothers? If "whatsoever a man soweth, that shall he also reap," were harvested by himself only, the baneful results were evil enough, but when he sows pathogenic seed to germinate in the organisms of innocent, unsuspecting, unprotected mothers and babes the calamity is ten fold, for the perils of death, of invalidism, of sightless eyes, are

Plate 4; Case VI.—Gonococci from cervical secretions, twelve days after confinement. Acute metritis and pelvic cellulitis.

far beyond the dangers he willingly hazards to gratify his sinful lusts.

To what extent these things prevail can not be fully known, but every physician who is not stupidly ignorant or wilfully blind to the fact, knows that they are of very frequent occurrence. When we consider that the majority of males (Ricord estimates 80 per cent. for France; Noeggerath believed the same ratio held good for New York City) have been affected at some period of life with a gonorrheal experience more or less persistent, how can it be otherwise, under the present sociologic conditions, that a large number of prospective mothers in or out of wedlock, innocent victims or *particeps criminis*, become the unfortunate hostesses of pathogenic germs that place them in dire perils at childbirth, perils which are all the more deplorable because unnecessary and preventable.

Noeggerath believed that "90 per cent. of males affected with gonorrhea remain uncured, and of every hundred women who had married men formerly affected by gonorrhea hardly ten remain well." These may seem like extreme views, but even liberally discounted the figures would still show a lamentable state of affairs.

Prince reported that 60 per cent. of the blind in the asylum in Jacksonville, Ill., were the victims of ophthalmia neonatorum.

Noeggerath gave us the warning that gonorrhea was the most fruitful cause of woman's pelvic woes long before Neisser discovered the specific diplococcus, so beautifully demonstrated in the photo-micrographs exhibited with this paper.

Man is so constituted as to remain indifferent to many evils by reason of their frequent and long-accustomed occurrence. He is also averse to any measures that curtail the indulgence of his animal instincts, regardless of consequences to others, but the day will come in that higher evolution of preventive medicine when an enlightened public will demand protection by quarantine, by restrictive legislation and by penal enactments against individuals infected with this loathsome and dangerous disease.

It will be a righteous advance when the State shall afford some protection to the innocent by placing legal barriers to the marriage of all individuals who, by competent medical inspection, can not present certificates of freedom from all contagious and hereditary diseases. Nor should the line be drawn on the male sex only. The advanced medical woman could confer no greater boon upon her sex and humanity than the accomplishment of reforms along these lines.

2036 Indiana Avenue.

DISCUSSION ON PAPERS OF DRS. MONTGOMERY, KIME AND BURR.

DR. E. E. MONTGOMERY, Philadelphia—In regard to the treatment suggested by Dr. Kime, I must agree with him as to the inadvisability of using the curette in cases of puerperal sepsis. I do not believe it has any special advantage, because the streptococci are buried in the tissues to such a degree that they are not removed by an instrument, and an increased irritation is produced by the curette which furnishes a more favorable soil for the development of the trouble. I believe that the future treatment of puerperal diseases will be in the use of serumtherapy. It is believed that an individual can be rendered immune to further ravages of germ products, and that the first thing to be done in the treatment of such cases, after a diagnosis of sepsis or sapremia has been made, should be the administration of antitoxin in such doses as will render the patient immune to further ravages. The local manifestations should be treated without fear of further development.

DR. RANDELL, Baltimore—I had quite an extensive experience in the management of severe cases of puerperal sepsis. A large number occur in the practice of every general practitioner that are simply mild infections due to putrefactive organisms; a number of cases occurring after abortion are of this variety, and the only thing necessary is to thoroughly clean out the uterus, making some antiseptic application to the endometrium. Under the various methods that are used the cases recover after one local treatment. But we have a large number of cases in which there is either a mixed infection or in which the streptococcus plays usually a very important part in the uterus of women after confinement, and these cases have to be attacked most energetically or they will die. If any practitioner will keep actively at work in treating them, he will cure a large proportion. A great many cases of puerperal sepsis which have come under my observation and care have been severe ones. My treatment has been similar to that which has been advanced in the paper, with some slight modifications. Some of these patients can be saved by washing out the uterus with an antiseptic solution every six hours, if the infection has not advanced too far. In some of the cases you may have a superficial gangrene at the placental site, due to streptococcus infection, and you should use the curette in

order to remove the gangrenous material, then apply inside the uterus a 15 per cent. solution of carbolic acid and 10 per cent. of iodin.

Dr. Joseph Eastman, Indianapolis—I believe that many cases of puerperal infection are largely due to the filthy poisonous syringes that are used by midwives. I recall an instance where I jokingly asked if they had a good syringe that I could use. Yes, was the reply. It was one that had been used by the neighbors for three or four years. Taking syringes and dipping them in bichlorid of mercury solutions is useless. The nozzles of such syringes should be sterilized by boiling before they are used. But far better than that is the idea to raise the patient sufficiently in bed to empty the uterus by vital force. Drainage by packing with gauze and curetting are carried to extremes. Savage, in his work on the "Anatomy of the Female Pelvic Organs," long ago taught an important physiologic principle. It is this: If there is a foreign substance in the cavity of the uterus, the cervix contracts tightly to hold it in. If there is a foreign body in the cervix, the fundus forcibly contracts to expel it. With the fundus continually contracting, the hyperplastic tissue is reduced and the absorption of septic material is interfered with.

I protest against scraping the cavity of the uterus with a sharp curette. I would not think of using anything sharper than a dull wire curette in the puerperal uterus.

The gentleman who read the last paper made an important point; one we can not mention without some feeling of concern. It almost makes one shudder to think of the number of young men who are not permanently cured of gonorrhea. There may be a granular patch in the urethra, or a stricture above it, and the poison is conveyed to the virgin wife after marriage.

Dr. J. T. Priestley, Iowa—I desire to say a few words from the standpoint of a general practitioner. I practiced the obstetric art before the introduction of the antiseptic practice of midwifery, and I have practiced it since with very much better results than before. I thank Dr. Montgomery for the suggestion of serum therapy. I think it a good one, and if carried out will be of benefit in many cases.

I prepare myself for attendance upon an obstetric case the same as I do for an abdominal operation. I think the same cleanliness of hands and other things brought into contact with the patient should be carried out. I do not use any intrauterine antepartum douche. I insist that when the douche is given the point of the nozzle of the syringe should be boiled. I do not hesitate to go from a case of scarlet fever or any contagious case, and attend a case of midwifery, if I have time to prepare myself.

My practice covers a territory in which women are largely attended by midwives during confinement, and I see many cases in which there is elevation of temperature after delivery. I do not wait to find out whether it is sapremia or septic infection, but take a Mundé curette, which is very large, almost the size of the curve of my finger, and use it to curette the uterine cavity. It has no sharp cutting edge, and with it the uterus can be easily scraped. At the same time I flush it with sterilized hot water. I formerly put in guaze packing. I did not realize at first that there was a difference between tamponing and draining by the use of gauze. Where tampons are used we simply do much harm. If a piece of wicking is used we can establish drainage and do good, in many of my cases I drain with ordinary iodoform wicking, after cleansing the uterine cavity with a dull curette. I think I have benefited a great many of my patients by this procedure.

Dr. Henry P. Newman, Chicago—In regard to the uterus in the puerperal condition it is usually large and flabby and will fall with the turning of the patient to either side, or if the patient is lying on the back it is very apt to be more or less retroverted. Here is where I object to the use of the tube, excellent as it is alone, it does not drain. In other words, you do not drain with a tube up-hill. If you supplement your drainage with iodoform wicking, you will find that it is more efficient and you will accomplish much more than by means of a tube. It is my practice to use wicking rather firmly in the upper part of the uterus. I do this not for drainage alone, but to stimulate uterine contractions in the lower half as it approaches the internal os. It is placed simply for drainage and not for the purpose of a tampon in any sense. It is applied loosely and a single strand projects from the surface. Under these circumstances drainage is efficient either with or without the rubber tube.

With reference to the use of the curette I am not partial to a sharp one, although a dull one or the finger may be used to remove débris in puerperal cases. However, in a patient after abortion I resort to curettage and use it in conjunction with mopping out the uterus the same as in a non-puerperal uterus, and I rely more upon swabbing than irrigation. If the microorganisms are beyond the reach of the curette, they are assuredly beyond the reach of the ordinary antiseptic wash. But with stronger solutions than those mentioned, namely, phenol or iodized phenol, which is practically 50 per cent. each of iodin and carbolic acid, I swab out the entire uterine cavity, and follow this with washing by sterilized water. These cases are not disturbed if the temperature does not rise, or symptoms of a grave order do not again manifest themselves. Irrigation, if it is done at all, I believe, is necessary in gonorrheal infection.

Dr. R. R. Kime, Atlanta—I would call attention to and emphasize the fact that drainage can not in all cases be attained by gauze, and in some instances it is necessary that the gauze be supplemented with a drainage tube. If you have a large flabby, retroverted uterus, you may introduce a strip of gauze and you will not drain the hemorrhage. If you put in a strip of gauze by the side of the tube, you may carry off the liquid and solid materials. We should remove the septic condition.

Dr. A. H. Burr, Chicago—The object of my paper was to call attention to a matter which seems to have been neglected, and which is an important factor in puerperal complications. Perhaps all of the infection that occurs to innocent women is the result of ignorance on the part of the husband, or he who later becomes the husband. There are thousands of young men who never would become the subjects of gonorrheal infection if they were properly enlightened, and if perhance they contracted this disease, certainly would not infect the innocent. I do not think it right that we should dismiss this subject in a trivial manner, by any means. I do not suppose we can wipe out this matter of gonorrheal infection by legislation any more than we can wipe out original sin by legislative enactment. But we can educate the young men as to the dangers of gonorrheal infection. I believe I am within bounds when I make the assertion, that if it were not for gonorrhea and its sequelæ, the gynecologists would lose half their patronage.

DEGENERATIVE CHANGES THAT OCCUR IN UTERINE FIBRO-MYOMATOUS GROWTHS.

Read in the Section on Obstetrics and Diseases of Women, at the Forty-seventh Annual Meeting of the American Medical Association held at Atlanta, Ga., May 5-8, 1896.

BY AUGUSTUS P. CLARKE, A.M., M.D.

CAMBRIDGE, MASS.

The presence of uterine fibroid growths has for the past few years given rise to much discussion among gynecologists; the consideration of the surgical treatment they have demanded has received much attention, and measures of procedure, in some instances apparently opposite, have sometimes been adopted.

The success attending the removal of fibroid growths either by partial or total hysterectomy has brought the subject of such neoplasms more prominently before the profession and has stimulated to such an extent inquiry into the necessity of adopting the more radical, surgical expedients that only the most careful clinical experience and pathologic investigation will be found capable of furnishing the data for determining the proper solution of the question.

It was formerly believed that when a fibro-myomatous growth underwent a retrograde process from electrolysis, or from other measures of treatment, or from spontaneous action, the conditions thus induced were always favorable; later experiences have shown the fallacy of such inferences, for certain pediculated subserous fibroids in taking on such phases become harder and more unyielding from the presence of the excess of the fibrous over the muscular element and from the consequent calcareous deposits occurring in the interstices. The pressure of such a mass on one or both ureters may cause contracting kidney and lead to a fatal result. Such growths, when not entirely pediculated or wholly subserous, may cause partial occlusion of the ureters, that may result in renal complication. Cases with the history of such sequelæ have occurred in my own practice; notes of autopsies made in my earlier practice clearly show that measures of relief could have been effected by merely resorting to abdominal incision and ligation of the pedicle or enucleation of a partially subserous mass.

The single as well as the multiple interstitial variety of fibroid growths may, besides giving rise to exhausting hemorrhage, be productive of baneful results of pressure upon important vessels and structures. Suppuration is another sequel that may appear; contraction and the consequent cutting off of the arterial supply may lead to suppurative changes and liquefaction of the mass, as occurred in a case in which I resorted to total hysterectomy for relief. The patient had for a long time suffered from repeated chills, febrile reaction, sweating and other constitutional symptoms as the result of the morbid changes that had gradually taken place in the growth.

In another case the patient, a married woman aged 47 years, had suffered for a considerable period. At the time I was called, the constitutional symptoms were unusually marked; the fibro-myomata were interstitial and had evidently undergone such serious alteration as to preclude the possibility of adopting operative measures for relief. A resort to surgical procedure for the removal of the growth in an earlier stage would undoubtedly have been attended with success.

In another case there was a history of gradual development of the growth which had been productive of uterine hemorrhage. The growth proved to be a large submucous fibroid in a state of advanced gangrene and had given rise to a marked septicemic condition of the organism. After some difficulty I succeeded in effecting the removal of the sloughing mass and in overcoming the constitutional disturbances that had supervened. These cases differ materially from those of the submucous variety, in which a mere dilatation of the lower segment of the uterus may be effected and in which the removal of the growth by morcellation with the curette and scissors suffices for a cure.

Fibroids, though liable to increase from excitation of the menstrual periods and during pregnancy, especially those of the submucous variety and those akin to the myxomatous class, may, nevertheless, undergo marked diminution after parturition, and may apparently disappear, from contraction of the uterine tissue during its normal involution stages. I doubt, however, whether such growths when once firmly established in the uterine tissue ever wholly disappear, unless their extrusion takes place through the medium of the various channels by hyper-physiologic constriction set up in the muscular element enclosing the neoplasm; they may for indefinite periods remain unaffected, but they are liable to become the foci of malignant or semi-malignant degeneration. Clinical observation and suspicions aroused from circumstantial evidences that fibroids may assume after the lapse of time a malignant degenerative change, have opened new fields for investigation. The teachings of the older pathologists were for the most part to the effect that fibroids were benign growths.

The advance made in pelvic and abdominal surgery have led to most careful scrutiny of the pathologic and histologic elements presented by the various stages of these growths; they have strengthened the view that had for some time been entertained that these neoplasms are subject to malignant change. The results obtained in the majority of instances can not be satisfactorily explained by regarding such growths as being benign in character but having nevertheless their development complicated more or less with that of malignant formations. The record of cases coming in my own practice shows unmistakably that the malignant degenerative changes to which these growths are prone are not of rare occurrence. The history of uterine morbid processes is often helpful in reaching just conclusions respecting the genesis of the disease. The favorite haunt of uterine cancer is in the cervix uteri; it often shows its development in the fissures of the lacerated portion. This may occur trom long continued and repeated irritation to which the parts have been exposed. From this center the morbid process may radiate and extend to the upper segments of that organ. The characteristic symptoms of the disease with the cachexia of malignant invasion are early accompaniments. In malignant degeneration of fibro-myomata the morbid processes leading to the development present other aspects. The early appearances of fibroids may not be attended with any definite constitutional peculiarities. There will be no facies of a distinctive type; except for the results that may be attendant on metrorrhagia or menorrhagia, the occurrence of the irregular outline of the growth and the consequent pressure or other annoyances experienced the patient may have the appearance of being in almost perfect health. In the unmarried or in those who have not suffered from cervical laceration the lower section of the uterus may be entirely free from the morbid invasion. The same freedom in this part of the uterus may continue after a uterine fibroid has assumed malignant phases until the development has extended downward. Martin of Berlin has reported cases of uterine fibroids that had undergone cancerous as well as sarcomatous degeneration. Boetticher reported cases of this character as early as 1884 and Schroeder also collected cases which have been reported. In some instances there had been a proliferation of the adenomatous mucosa to the deeper parts of the growth which gave rise to adenoid cancerous change. Emmet, prior to the dates above mentioned, reported instances under observa-

tion in which the tissue of a single fibroid wholly underwent the metamorphosis into sarcoma. He mentions also cases in which cancerous development had taken place; he refers to Klebs, who had made mention of fibro-myomata of the uterus, in which the myxomatous and sarcomatous development had occurred. Klebs, according to Emmet, had held to the view that genuine cancer can only "proceed out of fibromyomata in those cases in which the formation of the tumor extends to the surface of the mucous membrane." Emmet refers to the possibility of an aneurysmal development upon a uterine fibroid by the dilatation of some of the principal vessels. Some two years since there came into my own practice the case of a woman in whom a sarcomatous growth, as a secondary development, had occurred in the omentum. At times I could make out marked pulsations and a purring thrill; an abdominal section made a little later did not, however, reveal an aneurysmal sac. The conclusion reached was that the pulsation must have been imparted by the deeper vessels.

Fatty degeneration is another change which fibroids may undergo. This alteration may occur under the influences of pregnancy, which may take place, notwithstanding the existence of a large myomatous growth. A seemingly practical disappearance of the growth may partly result while the patient is in the pregnant state; in such an event the alteration may be hastened along with the occurrence of the involution of the adventitious uterine tissue. Such transformation is more likely to take place in cases in which the growths have been of myomatous formation. In my own practice I have met with a few such cases. I have always entertained, however, the conviction that they were remnants of the retrograded neoplasms which might become the source of further morbid change. In some cases the liquefied contents of the growth may be absorbed while the more solid constituents may remain and become walled off by the development of indurated tissue.

In other cases in which the growth continues, there will be beside myomatous tissue much fibrous element; the fluid portion may in part be absorbed leaving cavities of varying size within the growth. Neoplasms in this condition, though often termed fibro-cystic. do not belong to the classification of cystic developments since the cavities thus formed are destitute of a lining of epithelium.

Another form which has a practical significance to the abdominal surgeon is that resulting from the occurrence of enormously enlarged vessels or capillaries; these vascular elements may develop at the expense of the connective and muscular tissues of the tumor. The occurrence of these teleangiectatic myomata may be a fruitful source of hemorrhage and thus threaten or destroy the life of the patient. Early surgical interference offers the best opportunities for relief. The growth with excessive development of lymphatic vessels and dilated lymph spaces, termed myoma lymphangiectodes, is not, so far as I am aware, of common occurrence. The extensive edema accompanying such cases necessitates at times prompt surgical treatment.

Inflammation in the tissue of a fibroid may extend to the arterial coats (producing arteritis) and lead to the obliteration of the lumen of those vessels (endarteritis obliterans) and consequent deprivation of nutrition of the growths; this may cause them to slough and to become gangrenous. Sloughing or gangrene may occur in large interstitial fibroids by their being subject either spontaneously or otherwise to excessive intraparietal contraction. Rupture of its connection by the direct expulsion of the mass may lead to the same condition. Colloid degeneration may take place in the deeper portion and may give rise to conditions similar to those in which the tumor becomes liquefied.

Sudden hemorrhage, or an apoplexy (as the rapid extravasation of the sanguineous fluid is sometimes termed) may produce cavernous spaces that become occupied by coagula or serum; this sometimes leads to a disorganized condition. The contents may in part be absorbed; the residue remains quiescent for an indefinite period or becomes the focus of suppuration or of other advanced secondary changes. The amount of blood with which fibromyomata are supplied varies to a considerable extent. In most tumors of this character the vascular element is not plentiful, The capillaries in some of the forms are prominent while in others special artificial injections that are made show that but few vessels permeate the mass. The irritation and hyperemia with which the adjacent mucosa may be subjected are undoubtedly the cause of the hemorrhagic tendency; this condition may induce ulceration and sloughing. When fibroids are present in cases of pregnancy they may offer an impediment to the normal development of the uterine tissue and so lead to profuse hemorrhage and abortion. Beside the occurrence of the degenerative changes as above mentioned there have occurred the formation of melanotic deposits that have shown a close relation with the development of malignant disease.

Calcification of fibromyomatous growths as already stated is an occasional sequel; so also is the production of tissue resembling cartilage, which as a secondary result has occurred in the mass. One of the most frequent transformations, which without doubt fibromyomata may undergo, is their contraction and atrophy after the cessation of their normal development. Myxomatous changes and submucous alteration tend to the destruction of the growths. The intraparietal contractions to which they are subject serve to hasten the production of polypi and the commencement of extrusion from their normal sites. All these several kinds of secondary transformations occurring in fibromyomata are productive of further expulsive processes that often require only timely surgical interference as measures supplementary to the effecting of their complete removal.

DISCUSSION.

DR. W. G. MACDONALD, Albany—The most important point connected with this paper is in relation to the matter of development of malignancy as associated with tumors of the uterus, ordinarily said to be fibromatous in character, that condition with which our literature is full, a condition developing from the mucous membrane of the body of the uterus, a malignant endometritis, or adenoma, which is to a certain extent confusing. There is no tumor of the uterus, fibrous or fibrocystic, which is malignant. If a tumor presents clinically all of these conditions, macroscopically and under the microscope, which we ordinarily term a fibroid tumor, if after its removal there develops from the pedicle a subsequent tumor, the tumor was not a fibroid. It was a sarcoma. It may not have been primarily so, but it was subsequently, or at the time of removal. We can make this matter of malignancy always very simple as associated with the uterus and with all other bodies of the organism when we say that malignancy in tumors only

manifests itself in the two conditions of sarcoma and carcinoma. When a fibroid tumor at the menopause is quiescent for a few months, then within a period of three or four months shows a disposition to increase, we may reasonably conclude that it is a malignant tumor, and the probability is that there is grafted upon it an irritation in the uterus, a condition of sarcoma. These tumors, under the peculiar malignancy which occurs, take upon themselves the condition of sarcoma, and in six months they increase more than they have in sixteen years. When you have a supposed fibroid tumor of the uterus which has shown little growth under your observation for a period of three or four years, and then begins to increase in size, you can not too soon remove it. It is an important consideration in relation to these changes that they occur in fibroid tumors.

DR. CHARLES P. NOBLE, Philadelphia—It has been my experience to have operated on a large number of cases of fibroid tumors, and many of the women did not know they had them until after the menopause. They probably existed, but were small and gave rise to no symptoms until after the menopause, so that my own experience amply supports one point in Dr. Clarke's paper, that fibroid tumors which have given no symptoms before the menopause very frequently take on rapid growth after it, give pressure symptoms or cause hemorrhage after the menopause.

I distinctly recall three cases of tumors which became sarcomatous after having been operated on. Two of the patients died from recurrence. Another case has a recurrence at this time, so that of the three cases of sarcoma two are dead, and in the other death will follow sooner or later. These cases at the time of operation were designated by a pathologist as myxomatous, but subsequent development showed that the tumors were sarcomatous. The second case was one of spindle-cell sarcoma, and in the last case the tumor was necrotic and sarcomatous. We find carcinomatous changes after fibroids, but I have not seen a carcinomatous change in the tumor itself. I believe that is extremely rare. I have seen a number of cases of carcinoma of the cervix as a complication of fibroid of the uterus. We are all familiar with the necrotic changes in fibroids. We have to operate on sloughing fibroids. This change is most common in the submucous variety and the sloughing is due to efforts on the part of the uterus to throw off the tumor, so that traction takes place on the capsule and shuts off the blood supply. I have operated on necrotic fibroids that were not submucous. No doubt, this change occurs before as well as after the menopause. We can not dwell too strongly upon these facts in the history of fibroids, and can not condemn too emphatically the old teaching, that after the menopause uterine fibroids will disappear.

DR. CLARKE—I do not know that there is much more for me to say on this subject. I recognize the fact that the changes which I have dwelt upon in my paper are the more important parts of what I intended to bring out. I have met with cases and followed them up for many years. Some of the cases of fibroid tumors were treated by electricity and other methods, and it was said that the tumors would undergo contraction and diminish in size, but subsequently would become larger and larger, causing death of the patient. I collected a number of these cases in my earlier experience. I have been very much interested in this question for years and am satisfied that fibroid tumors do take on a malignant change, and it is not owing to the original disease mentioned. A woman with a cancerous uterus is not likely to survive for ten or fifteen years. We know for the most part, that when it occurs in the uterus, two or three years are about the limit of cancer, and that it goes on from bad to worse, unless operation is resorted to. Sarcoma rarely lasts for five or six years, and these cases can not be regarded as sarcomatous or cancerous all this length of time. When a woman, seemingly in good health and of good florid complexion, with no cachexia, no cancerous or malignant appearance, has a tumor which suddenly takes on malignant changes, we can not remove it too soon if we would prolong the patient's life.

SOME SUGGESTIONS IN THE PROPHYLAXIS, AND MANAGEMENT OF PUERPERAL ECLAMPSIA.

Read in the Section on Obstetrics and Diseases of Women at the Forty-seventh Annual Meeting of the American Medical Association at Atlanta, Ga., May 5-8, 1896.

BY H. D. THOMASON, M.D.

ALBION, MICH.

My experience in the prophylaxis, treatment and management of puerperal eclampsia has been confined in recent years entirely to private practice, yet it has been within my province to observe a sufficient number of cases to form some deductions and conclusions. However, I shall lay no actual claim to originality in inception. My suggestions are gathered from applications largely original with others.

The pathology and etiology of puerperal eclampsia is still an unsettled question—theories are numerous as well as contradictory; the text-books, and chairs in medical schools are brimming over with them, but nothing as yet has been positively proven, settled, or definitely accepted by the profession as a whole. As practitioners at the present time we necessarily occupy the position of clinicians awaiting instruction. Until pathologists are able to present to us true indisputable pathologic facts we must fall back upon our own clinic experiences. But to properly apply and employ even these we must have some definite ideas of our own relative to the etiology and pathology of puerperal eclampsia. The probabilities are that not every case of puerperal eclampsia is the result of the same pathologic cause. We find ardent advocates who maintain that nephritis and its resulting uremia, either apparent or disguised, is alone the offending cause, still closely agreeing with Lever, who, in 1842 supposed albuminuria to be the *casus belli*. Others maintain with Lusk that albuminuria may be a physiologic, even a diagnostic feature of pregnancy and that puerperal eclampsia is the result of renal insufficiency and albuminuria and uremia have nothing whatever to do with the matter. Again, others take the position instigated by Cohen of Hamburg. that there exists a cerebral eclampsia, organic cerebral lesions; while opponents to this belief declare these lesions to be the result of congestion and other causes, and at best are but secondary. A plausible theory has recently been advanced by Poe (Transactions Louisville Academy of Medicine) that puerperal eclampsia is the result of obstruction to the portal circulation due to hepatic cirrhosis causing peptonemia and producing either uremia or anemia. That there is an undue portal pressure during the period of gestation he claims to be proven because of hemorrhoidal enlargments during this stage and that all circumstances that increase tension, increase liability to eclampsia, as instanced by its frequent occurrence in primipara, and the older the primipara the greater the liability. With others he also recognizes that peripheral nerve irritation alone may be the sole cause of convulsions. King and others advocate as the cause of eclampsia pressure of the gravid uterus upon the inferior vena cava, the iliac veins, and upon the kidneys, thus producing passive congestion. While Halbertsma in 1883 introduced a theory which perhaps at the present time is received with as much favor as any other, that puerperal eclampsia results from pressure of the gravid uterus upon the ureters, thus to a great extent occluding the caliber, seriously interfering with their function and producing urinary

stasis. But to review or discuss the various theories of the causation of puerperal eclampsia is not within the scope or purpose of this paper. As already intimated puerperal eclampsia is not to be attributed to one identical cause in every case, so it is possible that each of the advanced explanations and theories may have more or less ground for truth when applied to certain individualized cases. For the pupose of this discussion let us broadly assume that puerperal eclampsia arises, 1, from the retention and absorption of toxins, no matter from what pathologic source, but due to the pregnant state; 2, from the result of peripheral nerve irritation; 3, from hysteric causes.

Unsatisfactory and uncertain as the pathology of this affection is, by far the larger number of cases are the result of the first cause, and to this group, principally, we will confine our attention, for to this class prophylaxis is the more important. It should be the rule of practitioners to educate their clientele to the importance of placing themselves under medical observation in the early stages of pregnancy, for it is the duty of the physician systematically and frequently to maintain a close observance of these patients during the period of gestation. Eclampsia seldom comes unheralded—the cases are indeed rare that do not show some prodromic indications if looked for by a careful observer. Frequent urinary analysis, chemic and microscopic, should be resorted to. The presence or absence of albuminuria or casts and other abnormal conditions should not only be determined, but the quantitative analysis as to urea and other urinary elements be made to establish the presence or absence of renal insufficiency, and the daily quantity of urinary excretion carefully observed. When we find urinary abnormalities during the stage of gestation it is sufficient to place us on our guard, but when this is coupled as it often is with edema, functional cardiac disturbance, impairment in vision, headache, or other well recognized prodromic symptoms there can be no mistaking the probabilities and dangers, and the advisability of prophylaxis is unquestioned. My habit is to have these patients placed upon an exclusive milk diet, urge them to drink large quantities of sterilized water, stimulate the excretory function of the skin by steam and hot vapor baths, and see that the bowels are kept abnormally active; a most successful method to accomplish the latter result is a daily enema of a saturated sulphate of magnesia solution. By this management, briefly outlined, I have seen the prodromic indications greatly modified, and in some instances entirely disappear and the patient tided through to full term and a normal delivery. If we have reason to believe that the prodromic condition of the patient is the result of pressure of the gravid uterus upon the ureters, thus occluding their caliber and producing renal stasis, upon theoretical grounds it would seem that a daily catheterization of the ureters according to the Howard Kelly method, as practiced by him for other renal affections, would be applicable here as a prophylactic measure. I confess I have never yet employed this means, but it is my purpose to do so when a suitable opportunity presents. But when despite all ordinary prophylaxis, the prodromic condition of the patient does not improve, when we have every reason to believe that if allowed to go to full term the patient must face the horrors and dangers of eclampsia, then the advisability of inducing premature labor as a prophylactic agent is to be seriously considered. Doubtless like other members of this section it has been my lot upon various occasions, having watched the prodromic symptoms as the period of gestation advanced, grow more and more apparent, to feel with misgivings that just so soon as the pains of labor advanced, at full term, just so sure would it be necessary to meet the responsibilities and emergencies of eclampsia. Though taken by surprise at the unexpected appearance of convulsions when prodromic symptoms were not expected or recognized, seldom have I been mistaken in my anticipations when the symptoms have been previously present. It is in such cases as these, when we are convinced that if allowed to go to full term the patient will be subjected to the ordeal of convulsions, I hold to the opinion that when we are satisfied of the viability of the child, we are not only justified but it is our duty to bring about premature labor: 1, for the ground of safety and comfort of the mother; 2, for the welfare and safety of the child.

A case coming under my own observation will illustrate: Primipara, aged 26; history of fatal nephritis in both father and mother; at fifth month of pregnancy exhibited prodromic symptoms, which steadily increased to full term, albuminuria, casts, scanty urine, excessive edema, headache, weak, rapid heart, disturbed vision. At the beginning of second stage of labor was attacked with violent convulsions; rapid delivery by forceps was accomplished, convulsions continued after the delivery of a dead child, and chloroform, chloral and veratrum viride barely saved her life. Convalescence was slow and tedious, complicated with phlegmatia dolens extending over six months, and traces of albuminuria could be detected for three months longer. Two years later patient became pregnant again; the same prodromic indications of equal severity presented at the same stage as in first pregnancy, and despite ordinary prophylaxis, increased steadily; patient was tided along until the middle of the seventh month when in view of previous history induction of labor was decided upon. This was accomplished under strict asepsis; while under anesthesia one slight convulsion occurred at time of dilitation of os, but patient was delivered of a live child and recovery was uninterrupted and complete.

When the viability of the child is unquestioned and the procedure is accomplished under strict aseptic conditions I am of the opinion that this is an important prophylactic method too often neglected. Why should a woman be subjected to six or eight weeks' unnecessary sepsis, accumulation and absorption of toxins? Is it not reasonable to infer that the safer course is induction of labor, prevent accumulative toxemia, and remove the exciting cause. The same arguments can be advanced in regard to the child. It is very well established that there is a relation existing in puerperal nephritis bearing upon the nutrition of the fetus. While the arterioles in the maternal kidneys are undergoing occlusion by products of disease, a similar occlusion and change is taking place in the placental vessels, thus jeopardizing and interfering with the blood supply to the fetus. This is one factor that accounts for infant mortality in eclampsia, and it is a reasonable conclusion that the same toxemia that threatens the mother also threatens the child. Dr. Barnes (British Med. Asso. 1888) claims maternal albuminuria to be the cause of intra-uterine

death—whatever the cause, a viable child's chances are better extra utero than when exposed to intra utero toxic influence, accumulative degenerative changes in its source of nutrition, the jeopardy of violent maternal convulsions and delay in delivery at full term. My experience has necessarily been limited to a few cases where this prophylactic method has been adopted, but I have had no cause to regret its employment, and in properly selected cases believe it to be a valid and useful prophylactic measure. The fact that cocain applied to the os, as treatment for eclampsia, suggests its use as a prophylactic when convulsions are anticipated, the rationale based upon the fact that pressure upon and dilatation of the os act, in at least some cases of eclampsia, as an exciting cause. We are led to believe from clinical experience that this is an important factor in certain cases. We doubtless can all recall instances where we have excited the convulsions simply by a digital examination, passing a finger through and perhaps dilating the os. Theoretically, at least, cocain may have its place as a prophylactic. My experience in its use has been limited to normal labor. When in some cases I have used it with apparent good effect just prior to the full dilatation of the cervix to alleviate the so-called agonizing stage of labor, I have had no reason to presume that it acted as a prophylactic, as in none of them was eclampsia anticipated. Under the head of reflex causes for eclampsia the bladder may play an important part. An instance is cited in the American System of Obstetrics (Vol. II. page 79), taken from La Motte's observations, where violent and threateningly fatal convulsions were instantly controlled by relieving pressure of the fetal head upon the bladder and drawing off a large accumulation of retained urine. An instance came under my observation, a case of placenta previa in a multipara, age 28 years; labor was terminated by podalic version and resulted in loss of child, but the mother in fair condition, save some necessary exsanguination. Case was left in charge of inexperienced hands. According to reports there had been difficulty in urination following delivery, and on the sixth day convulsions appeared. When I saw the patient she was in deep coma with rapid and thready pulse. The unusual size of her abdomen attracted my attention, and urine had been passed continuously, drop by drop. The catheter relieved the bladder of an immense amount of urine, but the patient was so exhausted from combined influences of placenta previa, distended bladder and convulsions she did not rally, and died in a few hours. Whether death was due to peripheral nerve irritation from distended bladder or uremia, was not determined, but the case suggested to my mind a practical prophylactic measure, to be assured in all cases of pregnancy and during the puerperal state that the bladder is emptied at proper intervals. So much prophylaxis authorities and experience teach, that eclampsia is most frequent during labor and less frequent after, but the relation is not definitely determined for the reason that labor often comes on as a direct result of the convulsions and many attacks that rightfully belong to the period of gestation are recorded as occurring during labor. The management of puerperal eclampsia depends upon the period in which the convulsions occur. If prior to fetal viability we must remember our duty to the child as well as to the mother, and so far as we can, in justice to the latter, adopt expectant methods, endeavoring by all means at our command to tide the crisis on to months of viability, but under no circumstances must the mother's life be jeopardized by fatal delay, or allowing continuance of frequent convulsions. The statistics of Lantos and Lohlein demonstrate that convulsions cease after the emptying of the uterus in 69 to 80 per cent. of cases, and Duhrssen, the powerful advocate for the active method of immediate delivery, establishes the fact that even the severest operations, Cæsarean section included, properly performed under asepsis and complete anesthesia, does not render the prognosis less favorable. Therefore, in cases where convulsions persist, and we are convinced that toxemia or some condition due to pregnancy is endangering maternal life, no time should be lost in emptying the uterus, and the child sacrificed for the welfare of the mother. When months of fetal viability have been reached, at the first suggestion of eclampsia it seems to me there should be no diversity of opinion as to the advisability of at once securing evacuation of the uterine cavity.

A recent contribution of Zweifel (*Centralblatt für Gynekologie*, Nos. 46-47-48, 1895) demonstrates the superiority of this active treatment, advocated by Duhrssen, as contrasted with the expectant method. Of 129 cases of eclampsia treated in the Leipsig clinic, 49 were treated by the latter (expectant) method, with a resulting mortality of 16, or 32.6 per cent., and 80 cases by the active method, with a mortality of 12, or 15 per cent. Objections have been urged against the active management on the grounds, 1, that even when the uterus is emptied there is no guarantee that convulsions will cease, and 2, that the manipulation and difficulty in securing evacuation aggravates the condition and further endangers and complicates the case. The fact that approximately 80 per cent. actually do cease when the uterus is emptied is a sufficient reply to the first objection, and the second objection is more apparent and anticipatory than real. I have not as yet encountered any serious difficulty in promptly evacuating the uterus of its contents. I have never had to resort to even slight incisions of the cervix; I would not hesitate to do so if necessary. I have never failed to secure dilatation of the cervix by the Barnes dilator attached to the Allen surgical pump or some of its modifications. On several occasions, under anesthesia, full cervical dilatation and delivery by forceps were both accomplished in less than an hour, when there was no evidence of uterine contractions, or any sign whatever of beginning of labor. I begin with this instrument familiar to you all, then follow by this modification of a Barnes dilator, and so on until in a short time the cervix will admit the hand for version or forceps for cephalic delivery. In primipara I found more time consumed in delivery by the forceps than in dilating the cervix. A case taken from my record will serve as a type of several others. Mrs. V., aged 16, primipara, unusually small and girlish form, suddenly attacked with eclampsia middle of seventh month of pregnancy; had one convulsion after another before seen. Catheterization of the bladder resulted in withdrawal of scanty and high-colored urine, loaded with albumin. No uterine contraction, and os closed. Chloroform was administered, the surgical pump and Barnes dilators employed; dilatation was accomplished without incisions, the forceps applied, and within forty minutes from beginning of operation a live child was delivered. Coma continued several hours,

but no more convulsions; the catheter had to be employed for several days, but patient made rapid and complete recovery. In antepartum convulsions, where child is viable, time is precious; I no longer waste it temporizing with venesection, veratrum viride, pilocarpin, chloral or any other means, but proceed with all possible haste to the evacuation of the uterus and in a great majority of cases nature assumes her eliminatory functions and little if any further therapeutics are required. In those cases where eclampsia continues after delivery, or when the onset is post partum, the indications for management vary, depending upon the condition or type of the patient. If the plethoric, with full bounding pulse, and other symptoms, all pointing to congestion, we have no remedy that can compare in its potency to venesection. We have no time to wait for the action even hypodermically of veratrum or pilocarpin, for at this time they are but poor substitutes for venesection, though they may be utilized as adjuncts. In this type venesection, thorough and sufficient, is the remedy par excellence, and other eliminatory means, such as hydragogue, catharsis, diaphoresis, etc., are not to be neglected. On the other hand, when the type is anemic, pulse weak, rapid and thready, we should hesitate to employ venesection. Here veratrum in 20 or 25 minim doses hypodermically administered is applicable; pilocarpin, while highly recommended, has failed to inspire the confidence we have in veratrum. The intravenous injection of one-half to one quart of normal saline solution, strongly advocated by Dr. Emory Lamphear of St. Louis, has in my hands yielded satisfactory results, though experience with it has been limited.

Since the advent of asepsis in obstetrics and gynecology, we are emboldened to adopt more active and effective measures in the treatment of eclampsia than formerly. The results have been good, and we have grounds to hope that the march of progress in the future will still lessen eclampsic mortality, and render this complication less to be feared by the obstetrician.

DISCUSSION.

Dr. Augustus P. Clarke, Cambridge, Mass.—With regard to albumin in the urine in these cases, I think it can be reasonably said that it is not as important a factor as some physicians would have us believe. In some cases in which no albumin is found the kidneys may be in a state of advanced disease. Such a case came under my observation some time ago. The patient had been examined for disease of the kidney. The urine was examined by several experts and pronounced free from albumin, and the kidneys were considered to be in good condition. In a little while the woman died, and postmortem examination showed advanced cystic degeneration in one kidney. The other was healthy. The lesson this case teaches is that we must not rely too much upon albumin in the urine, or upon the microscope, but must judge by the symptoms, and if we find edema or symptoms pointing to kidney trouble we can infer where the site of the difficulty lies, and if the prophylaxis is properly carried out there will be perhaps no need of further treatment.

Dr. John M. Duff, Pittsburg—If I understand the essayist properly, he suggests that as a prophylactic against puerperal eclampsia, where we have the premonitory symptoms, he would produce premature labor as soon as the child was viable. In a very large number of cases of albuminuria during pregnancy, and where the premonitory symptoms of eclampsia exist, the woman goes on to term and is easily delivered without eclampsia. Only last week I had a case of this kind. Two physicians brought the patient to me last fall and begged me bring on abortion. They again brought her back when she was seven months advanced in pregnancy, and I said to them, wait until she has a convulsion, and I will bring on labor. I attended her last Tuesday night, and I have never had a nicer case of labor in my life. I think it is bad teaching to have our young men go out and practice medicine with the idea that whenever a woman has the premonitory symptoms of puerperal eclampsia premature labor should be produced. You will find a great many cases in which it is not necessary. I could give quite a number of cases illustrating and emphasizing this point.

Dr. J. W. Bovee, Washington, D.C.—There are a great many cases of puerperal eclampsia in which there is never found a trace of albuminuria, while there are others in which traces of albumin are found in the urine, but the albumin does not come from the kidneys. It is true there are a great many cases in which the albumin comes from the kidneys. If we find traces of albumin in the urine we should be at least suspicious; if we find renal casts we should be still more suspicious, but we should not be very much alarmed until we find a diminution of the solids in the urine. If you have a small amount of urine, or a normal amount in twenty-four hours, with a diminished amount of solids, and this will be indicated approximately first by the specific gravity then we have reason for alarm. Methods should be put in vogue for an increase of excretions. The method of giving sterilized water and milk is very good, hydragogue cathartics are used for this purpose with hot baths, and anything which will produce an increased exudation of solids by compensation, because we may not get the kidneys to do their full duty. I would say in cases where Bright's disease exists before pregnancy and it becomes worse during labor we will have edema of different parts, probably, and some effects, such as headache, retained solid matter, urea and urates and others, then the idea of bringing on labor is more important in that class of cases. During pregnancy, while the patient is doing fairly well we should not bring on premature labor until puerperal convulsions have appeared; and even in these cases by using the hot pack, jaborandi and bleeding, with transfusion of normal salt solution at the same time, coupled with hot baths and hydragogue cathartics, we can stop the puerperal convulsions and the case will often go on to the full term of delivery. This is practiced in the hospital with which I am connected very successfully and we do not think of bringing on labor unless the convulsions are severe.

Dr. J. R. Rathmell, Chattanooga—To take such a broad position as to bring on labor in all of these cases is not, in my opinion sound teaching. In many of them there is a chance of saving the fetus and the mother. *Apropos* of this discussion I recall a case which came under my care wherein it was not necessary to bring on premature labor. I believe we would be justified in dealing with these cases in the manner that has been outlined if pregnancy is near its close. It is comparatively safe to interfere within two weeks of the time of full term, but if it is longer than that, five weeks, as it was in this case, it seemed in the judgment of the consultants wise to let the patient alone when she was under the influence of the remedies that have been mentioned and was free from convulsions within twenty-four hours, during which time she had five, and in four weeks from that time she gave birth to a living healthy child under the most favorable circumstances.

Dr. W. G. Bogart, Chattanooga—I want to protest against the idea of producing abortion or premature labor in all of the cases where convulsions present themselves. Just before I left home I saw a case in consultation. The lady had been suffering for some weeks. On examining the urine I found it heavily loaded with albumin. I expected convulsions in this case. The patient was then within a week of her confinement. She had a very difficult confinement. When she gave birth to her first child, she passed through two and a half or three hours of hard labor without any convulsions. The second child was a shoulder

and hand presentation and became impacted. The patient was in labor from 8 to 11 P.M., and finally the labor was so difficult that we had to deliver the child. She passed through labor without a single convulsion or even a symptom of one. I left the patient in a rather critical condition three or four days after confinement. I present the case simply to show that the urine was heavily loaded with albumin and yet no convulsions occurred. This case is not the only one that I recall.

DR. FISH, Milwaukee, said it was his custom, as soon as his services were engaged, to make an examination of the urine of the pregnant woman in order to determine the presence or absence of albumin. Cases were cited to show that the presence of albumin was not always a safe criterion alone for bringing on premature labor. In the treatment he never uses pilocarpin, as recommended, for the reason that it is liable to produce edema of the lungs, and on this account he considers it a dangerous remedy. In one case of puerperal eclampsia, the woman had a pulse of 140, but under the continued use of veratrum viride and morphia it dropped to 70. He believes that if the pulse is reduced to that point and kept there convulsions will not return.

DR. GILLESPIE, Tennessee—I use a little chloroform until I get the woman well under the influence of veratrum. I have used Norwood's tincture, commencing with 15 minims hypodermatically, which is repeated in three to five minim doses, and sometimes it requires four or six doses, but very often the second dose is sufficient to stop the convulsions. After the patient is under the influence of the veratrum I stop the administration of chloroform.

As to prophylaxis, I think most cases can be prevented by keeping the bowels well open, attending to the diet, prescribing the proper amount of exercise, and giving the patient something to act on the kidneys. If there is one remedy that I use more than any other it is the hyposulphite of soda in dram doses every three or four hours until it acts on the bowels. When it does not act freely I give a dose of salts. It not only acts on the bowels, but kidneys, and prevents auto-intoxication.

DR. B. M. HYPES, St. Louis, Mo.—In my opinion, the weak point of our practice as general physicians is that we are constantly allowing our patients to go into the hands of surgeons and consultants by not properly caring for them during pregnancy, and I hope that all physicians will take their patients in their own hands the moment they are pregnant, watch them, and not permit a month or even two weeks to go by, after they are six months advanced in pregnancy, without making a thorough examination of the urine in order to ascertain whether the kidneys are acting normally or not. The urine of the pregnant woman should be frequently examined and the quantity passed in twenty-four hours measured. The solid constituents of the urine should be measured also, in order to determine whether the urates are properly eliminated, and when you use proper remedies and apply them in time you prevent puerperal eclampsia.

Physicians do not always make a proper distinction between the character of different forms of puerperal eclampsia. We have hystero-puerperal eclampsia, and epileptiform eclampsia. Furthermore, we have eclampsia during pregnancy from cerebral disease, but it is my belief that 99 cases out of 100 of eclampsia during pregnancy and the puerperal state arise from insufficient action of the kidneys in eliminating the poisons or the toxins in the blood of pregnant women. The different kinds of convulsions must be separated in order to be properly treated. No one would think of giving veratrum viride in a case of hysterical convulsion; neither would the author of the paper attempt to induce premature labor without properly separating and classifying his cases. Much will depend upon the severity of the symptoms or convulsions. Premature labor is produced with the idea of saving the mother first, or both the mother and child if possible.

DR. THOMASON—I desire to thank the members for the free discussion of my paper. I think I have been partially misunderstood. I do not wish the members of the Section to entertain the idea for a moment that because albuminuria is present in the case of a pregnant woman it is a sufficient cause for the induction of premature labor. I do not regard albumin as a pathognomonic symptom of approaching eclampsia. But we all feel safer if the urine does not show albumin in these cases. Its presence is suspicious. I should want other evidence than the presence of albumin in order to bring on premature labor. In the paper I have presented to you I have merely given my own experience, and I must say that I have better results if I bring on premature labor, particularly when the prodromic indications are sufficiently severe to warrant it.

FIBROID TUMORS OF THE UTERUS, WHEN AND HOW TO OPERATE.

Read in the Section on Obstetrics and Diseases of Women at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5–8, 1896.

BY ALBERT H. TUTTLE, M.D., S.B.
CAMBRIDGE, MASS.

It is but a short time ago an opinion was more or less universally maintained that fibroid tumors of the uterus were benign growths. The fact that hysterectomy had such a high mortality at that period made the "cure worse than the disease," and probably did much to place these tumors in this relatively false position.

With improvements in technique and correspondingly excellent results in the removal of the uterus, it is no longer necessary or wise to wait until life is in immediate danger before recourse to the radical treatment of fibroids by surgical measures, but before the health of the patient is reduced by hemorrhage, inflammation, chronic suppuration and pain, to a delicate condition, and the dangers of the operation are further increased, as well as the difficulties by the complications of inflammation—pus and adhesions—to say nothing of the degenerative changes, the increase in the size of the tumor, and the effects of pressure on the ureters, there must be a time when certain indications exist for the truly conservative removal of these growths.

That this period for active surgical interference varies greatly in the opinion of various operators from the radical view of Jacobs, who considers that the presence of a fibroid tumor is itself sufficient reason for the removal of the uterus, to the conservative extremes of the electro-therapeutists, needs only to be mentioned, and it is this fact that has prompted me to express the conclusions derived from my personal experience in the treatment of these growths.

Small sub-serous tumors, when they give rise to pain and tenderness, interfere with motion and locomotion, produce reflex and nervous disturbances, or directly by pressure make more or less troublesome the functions of menstruation, defecation and micturition, should be removed. They are best extracted through the abdominal route, by enucleation. The peritoneal flaps are sewed together with fine animal sutures and the uterus dropped into place.

Whenever an interstitial fibroid has reached any considerable development, or a number of small ones have increased the size of the uterus above that of the fist, the uterus and fibroids should be removed en masse, to prevent changes which sooner or later will surely result from the constant pressure exerted upon

the uterus. Baer's supra-vaginal amputation of the uterus is the simplest operation.

Whenever the fibroid condition is complicated by inflammatory changes, either in the growth itself, the pelvic cellular tissue, uterus, tubes or ovaries, a total extirpation should be performed. I know of no better method for the complete removal of the uterus than the vagino-abdominal method, which I have devised and already described. Unless the symptoms are urgent I would recommend a long period of rest and local treatment as a preliminary to surgical treatment (six weeks to two months), as by this means much of the infiltration and subsequent danger of auto-infection will be avoided.

Whenever the common complications of a fibroid tumor, pain, hemorrhage and serous discharges are uncontrolable, the uterus should be removed. Unless there are extra-uterine complications, Baer's supra-vaginal amputation should be preferred.

When a fibroid uterus is complicated with pregnancy, and one or more nodules rapidly increase in size, early interference is demanded. Often the fibroids can be removed without disturbing the contents of the uterus; but an early removal may necessitate killing of the fetus, in which case operators will become divided in their course of procedure; some, to give the mother the best chance for life, will remove uterus and fibroids early, or the contents of the uterus, others will wait until near term and do a Cæsarean or Porro's operation, while a few will do nothing until labor sets in, when they will attempt to raise the tumor out of the pelvis so as to admit the passage of the child. Each case demands special consideration; a multi-nodular fibroid uterus is less likely to be disabled to the extent of complete incapacity for performing the function of expulsion of a fetus, and at most make the condition of delivery simply one of inertia uteri; a single fibroid is apt to increase to dimensions sufficiently great for the mechanical obstruction of delivery, and at term will nearly always be found in the pelvis or the lower segment of the uterus, a point it has reached from the force of gravity, no matter where the place of origin.

One or more growths of hen's egg size may not seriously interfere with full term delivery, but a growth of this dimension in the early months of pregnancy is more than likely to attain dangerous proportions before the time has arrived for the natural expulsion of the child. If the growths alone are removed a subsequent ventral hernia will usually more or less rapidly follow the final delivery at the site of the abdominal incision, and must be considered among the indications for the removal of the fetus.

The danger of sepsis from auto-infection is increased in the abortion of a fibroid uterus.

When a fibroid uterus is complicated with pregnancy, the problem to be solved is not one of comfort or health, but the serious condition of life or death, therefore surgical interference should not take place until a study of the condition of the patient and the relations of the tumor and uterus show clearly to the operator that there are greater chances of life with operation than without.

When failure in health occurs in a woman having a fibroid uterus, and no cause for the same can be found, unless it be the condition of the uterus, for which the tonic and medicinal methods of treatment are unsuccessful, hysterectomy, a supra-vaginal amputation, should be performed as *dernier ressort*.

CONSTIPATION; SOME OF ITS EFFECTS AND ITS NON-MEDICINAL TREATMENT.

Read in the Section on Practice of Medicine, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

BY E. S. PETTYJOHN, M.D.

ALMA, MICH.

The large number of people suffering from constipation and its effects, and the clinical difficulty met in obtaining relief therefrom, leads to the conclusion that the full signification of this affliction and its deleterious influence are not comprehended either by the people or the profession.

In its reciprocal influence this condition sustains both a causative and a resultant relation. Constipation as a functional disorder may be defined as an abnormal condition of the great colon and the entire intestinal tract, manifested by the unusual retention of excrementitious material, both as to *quantity* and *time* of evacuation. It may be owing either to diminished action of the muscular coat, to the diminished secretion from the mucous membrane, or both, to defective innervation, to habits and occupation, climate or diet, in addition to which there seems to be an infinite variety of causes.

A study of the history of 300 cases shows that about 60 per cent. of patients are suffering from this ailment, and that the number is proportionately larger among women than among men.

Congenital constipation may occur dependent upon the anatomy of the colon, the water being absorbed by a reduplication of the colon itself, especially the descending part, as that part is longer in infants in proportion as compared with the ascending and transverse, and hence liable, by being crowded down into the pelvis, to flexures and reduplications that favor impaction.

In adults the transverse colon is most liable to variation in length and position, and being smaller in diameter than the ascending, aside from congenital malformation, may be bent downward almost to the pubes by long continued distension, forming a sharp bend at the sustentaculum hepatis and at the splenic flexure, as has been found in two cases under the writer's observation.

In considering this condition, we regard individual habit and idiosyncrasy and compare with the rule, as persons do become constipated without notable or sensible inconvenience to themselves, without manifesting any of the local symptoms, and while having regular and apparently sufficient evacuations.

We come to the consideration of constipation more on account of its relation to other ailments and the entire system, than because of the mere inconvenience induced. The intestines and colon and the rectum are considered as digestive, eliminating and secreting organs, and also as organs of absorption.

With their great extent of retiform tissue enclosing a multitude of blood vessels and nerve ramifications, with their mucus follicles and valves of retardation, with their glands, lacteals, arteries and veins, the powers of retention and absorption belonging to this tripod are beyond compare. The wonder is that all the contents which enter are not taken into the circulation.

While the colon and rectum have not the digestive office we have long supposed, their absorptive power is greater than has been thought, and the quantity

absorbed is in proportion to the time of contact and concentration of the substance. While these organs seem in a certain sense endowed with the power of selection they do absorb digested aliment, medicines and deleterious material with about the same avidity.

The intestinal nervous system is noticeably complex. Filaments are received from the pneumogastric, the sympathetic and from the lumbar cord. After having been distributed to the plexus of Meissner under the submucous coat and the plexus of Auerbach between the muscular planes, branches thence supply the glands, muscles and blood vessels. Some preside over the absorbents and secretions, others over the peristaltic muscular movements, others over the intestinal circulation. Not only do these medullary and ganglionic systems direct the functions of the intestines, but through them the nerve centers of the brain have a direct influence over the entire apparatus. Since all functional action in the system is reciprocal, it follows that the functional activity of the chylopoietic system must effect the nutrition of the brain and entire nervous system.

We acknowledge that human life is a constant processional activity of elimination and repair, metabolism occurring everywhere. Observation is demonstrating the part taken by bacteria and microbes in this process in the mouth, stomach and intestines. In the chemic, fermentative and putrefactive changes thus occurring, ptomaines are being constantly produced which, when absorbed as toxic and excrementitious substances, produce retrograde changes in the quality of the blood, diminution of the red blood corpuscles, and by supplying an infected or imperfect nutriment to the brain, become a prominent factor in the production of cerebral anemia and nervous debility only limited in its effect by the shortening of the microbal longevity from the effects of its own secretions. If this deficiency of nutrition or the supply of toxic material be continued, the increased nervous irritability is followed by a decrease, and withdrawal of nourishment is followed by brain exhaustion.

From the normal intestine Babes isolated five species of bacteria, whilst an enormous number of microorganisms were found in the large intestine and feces. Bouchard says: "The conditions favorable for the maintenance of putrefaction are so numerous that we ask whether digestion can ever go on normally?" While the hydrochloric acid of the stomach neutralizes the infectious agents, they are passed into the intestines in a state of latent activity, when fermentation again begins. While the bile arrests fermentation, it is also capable of putrefaction, which is no doubt one of the causes of the offensive breath in constipation. We thus find the small intestine, and especially the large intestine, in a condition to pass products of putrefaction and toxic substances into the blood current. Since our most inoffensive and most valuable foods (meats) produce toxic substances; since the bile contains poison and the putrefactions of undigested residue produce poison, and the fecal matter is toxic, with all of these shut up in the intestines and colon, how can the guilty (those who do not believe in defecation), or even the innocent, escape destruction? If the kidneys are acting well, some of the toxics escape through the urine, and if the skin is eliminating, it furnishes relief, but these are rather remote sources of exit for so large a quantity of excrement when the way to the outside world is so close at hand.

Hypochondria, nervous depression, nervous headaches, functional neurasthenia, migraine, vertigo, disorders of nerve sensibility, noises in the ears, dyspepsia and depression incidental thereto, with a long train of psychic, nervous and nutritional troubles, are directly or indirectly the result of constipation. Even when many functional difficulties seem to be the primary disease, they only form an arc of a vicious circle begun with the nucleus of constipation.

The mechanical pressure against mesenteric blood vessels by over-distended bowels, especially if long continued, causes increased flow of blood to the brain and a temporary hyperemia with its concomitant symptoms, like an Esmarch bandage about a limb, or a sudden cooling of the surface of the body which in winter is the cause of more frequent cerebral hemorrhages than at other seasons, or like the sudden suppression of the menses or of an hemorrhoidal discharge, or even the straining at stool, all of which are to be avoided in apoplexy and cerebral congestion, on account of the increased pressure of blood in the brain which they produce.

The nervous system, as the master tissue of the body, needs the highest nutrition, and hence is most easily disturbed. It is fed in its truest sense by the overflow of nutriment after its refinement and elaboration in other tissues. Whether the nerves are nourished by the plasma reaching the axis cylinder at the nodes of Ranvier or not, we believe with Waller that the nutritional activtiy of nerve fiber is in the direction of its normal physiologic activity. Any inhibition of this function will lower the nerve excitability. A long period of repose not only lowers the excitability but, if continued beyond a certain limit, atrophy and degeneration occur in the nerve substance itself.

Continued unusual pressure produces excessive activity of the nerve supplying the part, excitability is finally abolished and exhaustion of the nerve occurs locally (as in over-distension of the bladder), or it may even produce a neuritis. A constantly overloaded condition of the bowels may produce either of these local results on the nerve filaments themselves. The effect of this travels backward to the controlling ganglia in the lumbar cord and defecation, to some degree a reflex act, when its directing center is not sensitive to the controlling impulse of the brain, does not occur promptly, and the constipation thus reacts upon the whole system.

In patients who complain of symptoms referable to the spinal region, and where there is entire absence of anatomic affections of the cord, and often when these manifestations are united with cerebral symptoms and there is general disturbance of the entire nervous system with a neurotic heredity, it is very frequently a functional trouble. Such a case recently came under my care (from the country), a Miss M., aged 32. She had previously been afflicted with convulsions, supposed to be epileptic, at and since puberty, but had had none for two years previous to my seeing her. She complained of attacks of severe occipital pain when she would become nauseated and dizzy. At the same time she would have a convulsive-like attack with irregular tremors and a peculiar nodding and swaying movement of the head, which she said she was unable to control. She also had pain in the cervical and lumbar region, deep-seated. These attacks occurred irregularly from one to twelve weeks apart. She was an invalid each time from five to fifteen days.

She had been treated for several years and informed by her physicians that she had epilepsy and disease of the spine. Thorough examination revealed absolutely no signs of spinal disease nor anatomic disturbance of the cord. After three months of treatment she fully recovered, beside having gained eighteen pounds in weight. The late Dr. Jewell believed and taught that the effect of constipation might produce a condition of the brain akin to, or that could be classified as, transient mania.

The first elements in curative treatment, I consider good food and good digestion. The diet should consist of coarser foods such as would leave a residue and aid in increasing the bulk of fecal accumulations. Broths, fish with the skin, fresh meats not too tender, whole-wheat and graham bread, mush, hominy, corn bread and all green and watery vegetables, baked potatoes with skins, and cereals containing hulls and fine seeds, prunes, figs, apples with the peeling and all fruits generally. Rest in the recumbent posture for a half hour or more both before and after eating is of value.

Massage on anatomic principles I place first in the mechanical treatment. The manipulations should not be used until two hours after a meal. The thighs should be flexed and the abdominal walls relaxed. The treatment should be given dry, stimulating first the skin, then the walls of the stomach, the different sections of the colon and the intestines. Pétrissage given so as to impart an oscillating and vibratory movement, combined with the varieties of tapotement, are the best forms of treatment. Cases of obesity and atony of the muscular coats and chronic intestinal and gastro-intestinal catarrh are relieved in two to four months. The intestinal secretions or increased obstruction of the bile duct is relieved, the peristaltic action is stimulated, and the contents of the sigmoid flexure and entire colon are pressed toward the rectum. If there are biliary calculi no pressure should be made on the adjacent parts, although usually pressure should be made over the fundus of the gall bladder, to assist the bile toward the intestine. The stimulation of the skin, which is here supplied by the last seven dorsal nerves the same origin as the splanchnics, as well as the plexus of Auerbach, and the mechanical effect of moving pressure do bring favorable results.

In the use of the cannon ball three or four pounds in weight the patient or operator should be thorough and systematic. The ball should be rolled over the entire abdomen, being used for five or ten minutes morning and evening, the treatment ending by the patient balancing the ball for a few minutes on the navel.

In gymnastics all movements that use and strengthen the abdominal muscles, such as lying on the back and raising the limbs perpendicularly, the flexion at the hips, twenty or thirty times each morning and evening.

Rowing, horseback riding and cycling are helpful if used regularly. While it is best to have a definite hour, that is not essential, but when a time is fixed, if the preceding half hour is devoted to the voluntary contraction of the anal sphincter muscles, the reflex effect is to aid in stimulating the peristaltic action. Time should be given, and one should go for relief on the first prompting.

The faradic current of sufficient strength to produce contraction of the different portions of the intestines and colon is helpful. The galvanic current; the cathode in the rectum, large anode over abdomen, repeated daily at the same hour is effectual.

Hydro-therapeutics have proven successful remedies in the author's practice. Drinking large quantities of cold water on arising and an hour before meals, and two or three hours after food, taking during the day 70 to 80 ounces, beside that with the meals, is of exceedingly great value. This remedy, with regulation of habit, has cured many cases.

Fomentations to the bowels, stomach and liver daily and a cold pack to the bowels at bedtime, have been successful. Alternation of hot and cold to the spine and the cool bath have shown results.

The difficulty I find in the use of any, or a combination of these measures, is to induce the patient to be systematic and persistent in following directions. But I am thoroughly convinced that by these means producing constitutional and local effects, more satisfactory results are obtained than with medicines, and when the patient recovers, he stays well.

That constipation has a psychic and a moral effect the laity recognizes, and we will all agree with the author who says: "Those persons whose bowels are freed by an easy, regular movement every morning, so soon as they have breakfasted, are meek, affable, gracious, kind, and 'no' from their mouth comes with more grace than 'yes' from the mouth of one who is constipated."

THE SURGICAL TREATMENT OF RETRODEVIATIONS OF THE UTERUS.

Read before the New York State Medical Society, at Albany, Jan. 28, 1896.

BY AUGUSTIN H. GOELET, M.D.

PROFESSOR OF GYNECOLOGY IN THE NEW YORK SCHOOL OF CLINICAL MEDICINE.

It will be admitted that a cure of retrodeviations of the uterus is seldom, if ever, accomplished by the ordinary methods of treatment and that they demand more careful consideration than is usually accorded them. The routine plan of inserting a pessary and dismissing the case from further attention is an error, unfortunately, too often committed. The pessary can only be regarded as a splint which is serviceable as an aid to other measures in bringing about the desired result, but nothing more and will accomplish very little unaided. It may be true that all such displacements of the uterus do not require surgical intervention for their cure, but when structural changes have taken place in the walls of the organ nothing else will yield a prompt and satisfactory result. A pessary might be worn throughout the lifetime of these patients and even if it maintained the uterus in a correct position a cure would never result and she would never be able to go without it, unless something else is done to overcome the conditions which produce the displacement or are consequent upon it.

These displacements do not necessarily require always a grave surgical operation for their rectification, since frequently a trachelorrhaphy or curettage, or both combined, in conjunction with appropriate after treatment will be sufficient in many cases. It is only where there is fixation from adhesions that it may become necessary to open the abdomen, break them up, bring the uterus forward and suspend it from the anterior abdominal wall.

On account of the difference in the pathologic condition in the uterine wall, retroversion and retroflexion should be dealt with differently. In retroversion one

of two conditions may prevail. The uterus is either soft, being in a state of subinvolution, or it is hard, the condition being one of sclerosis. The latter is believed to be an advanced stage of the former, both being regarded as different stages of metritis. In retroflexion, if it has existed for any length of time the condition of the anterior and posterior walls is quite different. The anterior wall is put upon the stretch and the posterior wall is contracted and shrunken, its structure being dense and hard because of interference with the circulation and nutrition making the displacement permanent.

Associated with this condition of metritis there is always an endometritis, in both retroversion and retroflexion. Therefore in both forms of displacement dilatation with careful curettage is demanded as a preliminary step in their treatment, but in retroversion the uterus should subsequently be carefully packed with gauze to secure depletion and drainage, and to stimulate contraction, and in retroflexions a glass drainage stem should be employed because it will act as a splint and maintain the uterus in a straightened position. With the aid of absorbent iodoform gauze packed in the vagina this is readily accomplished.

TECHNIQUE OF CURETTAGE AND TREATMENT OF RETROVERSION.

The patient is anesthetized after previous preparation which should include shaving the vulva and irrigation of the vagina with a hot solution of bichlorid,

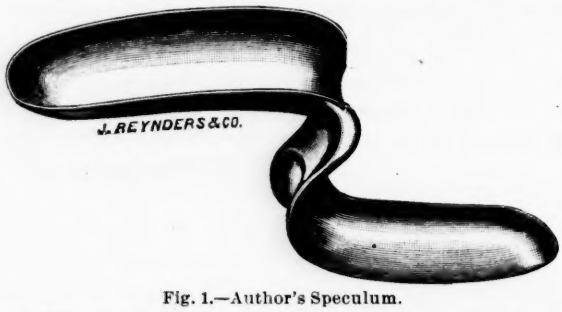


Fig. 1.—Author's Speculum.

1 to 4000, or a 1 per cent. solution of lysol, hot. She is then placed in either the dorsal or lateral (Sims's) posture, as is most convenient for the operator. The speculum represented by the accompanying cut (Fig. 1)[1] will answer equally well for either position. The cervix is seized on the right side with the angular

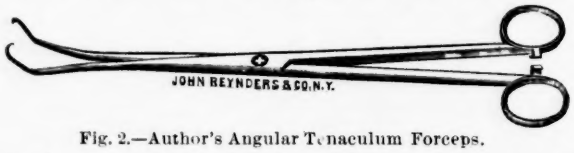


Fig. 2.—Author's Angular Tenaculum Forceps.

tenaculum forceps (Fig. 2),[2] which is held in the left hand, and the dilator (Fig. 3)[3] is introduced up to its shoulder. The necessary degree of dilation should be done slowly and gradually so as to prevent injury to the parts, especial care being taken to prevent the instrument slipping and producing laceration.

[1] The author's speculum possesses many advantages over the Sims's speculum or the bi-valve or tri-valve instruments, on account of the convenience of manipulations afforded and because it is self-retaining in both positions.

[2] The special advantage of the author's angular tenaculum forceps is that the strain is against the curved sides of the points and not directly against the points as is the case with the straight instrument, hence it does not cut out or slip and produce laceration of the tissues seized by it.

[3] The author's dilator is designed to effect slow gradual dilation without injury. The curve is less acute than that of dilators in general use and the ratchet catch attached to the handle holds the dilatation as it is accomplished, but at the same time it can be quickly relaxed at any time by pressure of the little finger upon the spring when the instrument seems to be slipping.

The dilatation accomplished, the double current irrigator (Fig. 4) is inserted to the fundus and the cavity is washed out with a hot 1 per cent. solution of lysol. The next step is the curettage, and it must be done with special care. Every part of the cavity is gone over and all diseased membrane is thoroughly removed. Selecting a medium-sized rigid dull curette the posterior surface is first curetted, commencing at the left (patient's right); then the anterior and lateral surfaces are treated in like manner. Substituting a smaller curette the membrane is removed from each cornu and the fundus. Then with a sharp curette the

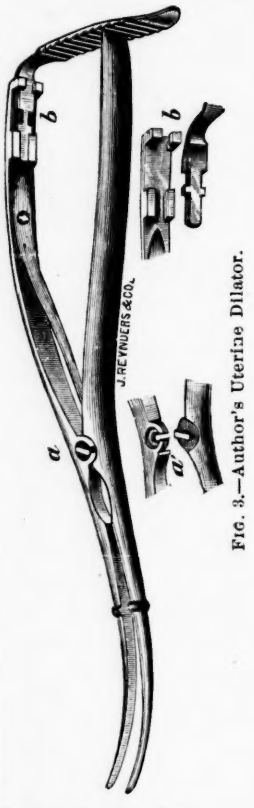


Fig. 3.—Author's Uterine Dilator.

Fig. 4.—Author's Double Current Irrigator.

hypertrophied tissue about the internal os is removed. This being accomplished, the cavity is again thoroughly irrigated with a hot solution of lysol and it is then ready for the insertion of the gauze. This is best accomplished by means of the applicator forceps (Fig. 5). Iodoform gauze (20 per cent.) which has been rendered absolutely sterile is used. A strip an inch wide and a yard long is carefully introduced into

Fig. 5.—Author's Uterine Applicator Forceps.

the uterus leaving an inch or two of the end protruding into the vagina. The vagina is then tamponed with the same gauze (cut into strips two inches wide) in such a manner as to maintain the uterus in a correct position. Since the gauze will cease to act as a drain when it becomes saturated it should be removed and renewed every twenty-four hours. At the same time the uterine cavity should always be thoroughly irrigated with the hot solution to remove all débris and secretions. This after treatment should be continued for a week, during which time the patient is confined to

bed. At the end of this time a vaginal pessary is adjusted so as to maintain the uterus in a correct position, and the case is kept under observation for several weeks, the uterine cavity being washed out once or twice every week as necessity demands. This is to be continued until a healthy condition of the endometrium has been restored, as will be evidenced by the absence of débris or mucus in the washings.

If these details are observed carefully there will be no rise of temperature in these cases and the result of the curettage will be permanent. There is no necessity for the complicated process of preparing the gauze which has been advocated by some writers. It is only necessary to insure its absolute sterility by submitting it to the necessary degree of heat for a sufficient length of time.

After this operation and the subsequent after treatment, the uterus will quite rapidly resume its normal size and condition if it has been maintained in a correct position by the pessary which should be worn for several months.

TECHNIQUE OF THE TREATMENT OF RETROFLEXION.

The dilatation and curettage is done in these cases in the same manner as described for retroversion, but instead of inserting gauze into the uterus a glass drainage stem (Fig. 6) is inserted to serve as a splint and maintain the organ in a straight position until a normal condition of its walls can be restored. This stem is two inches long, is perforated through the center for drainage and its size is No. 12, English scale.

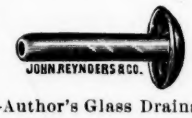


Fig. 6.—Author's Glass Drainage Stem.

After curetting the cavity and irrigating with hot lysol solution, the stem which has previously been rendered sterile is introduced and held in position by a tampon of iodoform gauze packed carefully around the cervix. Additional tampons of the same gauze are inserted in front of the cervix forcing it backward into the posterior cul-de-sac of the vagina, thus throwing the uterus forward into a position of anteversion.

The stem should be removed every day, the cavity of the uterus washed out with lysol solution and after cleansing it the stem is reinserted. At the end of a week, during which time the patient is confined to bed, a pessary is carefully adjusted to take the place of the vaginal tampon and maintain the uterus in a correct position. The stem is retained for a day or two longer with only a loose wad of gauze against it to prevent it slipping out. If it is found that the pessary will sustain the organ in a proper position the stem may be removed and the patient is permitted to get up. The pessary must be worn for several months until it is found that the uterus will retain a normal position without its support.

Almost every case of retro-displacement of the uterus not fixed by adhesion or exudation, is satisfactorily amenable to this method of treatment. When slight or very recent adhesions complicate the case they may sometimes be broken up by careful manipulations through the vagina under anesthesia without opening the abdomen. Then the above operative procedure is to be adopted as in those cases when adhesions have not existed. When the organ is bound down by exudation this should when possible be removed first. When a lacerated cervix complicates the displacement it should be repaired at the same time, but in these cases the gauze packing will have to be dispensed with because it might interfere with proper union.

In dealing with retroflexion if it is necessary at the same time to do a trachelorrhaphy, the drainage stem can be used without danger of interfering with union of the freshly united surfaces if the operator is careful in making the denudation to leave ample room for the new cervical canal, and not draw the sutures too tightly. When the adhesions are firm and numerous they should be broken up by the finger inserted into the abdominal cavity through a small incision and the uterus should be brought forward and suspended from the anterior abdominal wall after the manner described by Howard Kelly.

TECHNIQUE OF SUSPENSIO UTERI.

After proper preparation of the patient she is anesthetized, the bladder is emptied and an incision about two and a half to three and a half inches long is made through the abdominal wall just above the pubis opening into the peritoneal cavity. Two fingers of the left hand are inserted and the uterus is loosened from its attachments and the fundus is brought forward and up into view. The edge of the peritoneum on each flap of the abdominal wound is next seized with pressure forceps and drawn out. A curved needle carrying a medium-sized silk ligature is inserted through the peritoneum and subperitoneal fascia on the left near the lower angle of the wound and is next inserted upon the posterior face of the fundus and then through the peritoneum and subperitoneal fascia on the right flap of the abdominal wall, at a point opposite its insertion on the left. When this ligature is tightened it brings the posterior face of the fundus snugly up against the anterior abdominal wall. A second suture is inserted near the other on the abdominal wall and just below the other on the posterior face of the uterus. When this suture is tightened it throws the uterus forward still more into a position of anteflexion. These sutures are tied carefully so as to maintain an equal strain on each, bringing the uterus up snugly against the abdominal wall, and the abdominal wound is closed in the usual manner.

One advantage claimed for this operation over that of ventrofixation is that the uterus is not permanently fixed in an abnormal position, but it eventually recedes somewhat and remains suspended by two firm fibrous cords in an easy position of moderate anteflexion and is fairly movable.

The patient is confined to bed for two or three weeks and is directed to wear an abdominal support at first upon rising. No pessary or additional support will be needed after this operation, but injuries to the pelvic floor should be repaired at the same time in all cases. When done in properly selected cases this operation should be uniformly successful and the mortality is *nil*.

Alexander's operation, which is only applicable when the uterus is movable, is unnecessary, its chief disadvantage being the prolonged convalescence it entails. The operation described above for movable displacements is preferable because it can be done quickly and necessitates only a week's confinement in bed. It is a rational procedure because it aims at a cure of the coexisting metritis and endometritis which is the maintaining cause of the displacement.

It has been suggested to apply Alexander's operation to fixed retrodisplacements after first incising the posterior cul-de-sac and breaking up the adhesions. This may be easy when the adhesions are not very extensive, but the difficulty of securing thorough asepsis by this route is certainly an objection as well as the time which this and the added Alexander's operation involves. All things considered, suspensio uteri is to be preferred when the organ is adherent.

Of the other operations recently suggested for overcoming these displacements, that of incising the posterior cul-de-sac of the vagina and bracing the uterus up by means of gauze crowded into the peritoneal cavity behind it, does not appear to be either wise or justifiable. A retroversion may be thus overcome but I fail to see how it can maintain a retroflexion even temporarily in a correct position. The chief objection to this procedure, apart from its faulty principle, is that it substitutes an exudation for the utero-sacral ligaments which are destroyed, and the cervix remains fixed to the rectum, an abnormal condition for many reasons objectionable.

Vaginal fixation does not appeal to me as either rational or justifiable since it substitutes a fixed anteflexion for a movable displacement. The recent unfavorable reports of protracted and complicated labor when it follows this operation certainly constitutes a very serious objection to it. Its originator, Mackinrodt, has abandoned it.

Upon the whole the operations described above for movable displacements and suspensio uteri, when the uterus is adherent or when disease of the adnexæ complicates, are I believe the most satisfactory and the results, so far as my observation goes, bear me out in this conclusion.

351 West 57th Street.

PREVENTION OF TUBERCULOSIS.

Read at the Pennsylvania State Medical Society, Harrisburg, Pa., May 19, 1896.

BY E. B. BORLAND, M.D.

Clinical Lecturer, Diseases of the Chest, Medical Department of the Western University of Pennsylvania; Assistant Physician to the West Pennsylvania Hospital, Member American Medical Association, etc.

PITTSBURG, PA.

Under the light of recent investigations, the old theory of inherited tuberculosis is at best questionable. Congenital tuberculosis is comparatively infrequent. The so-called hereditary predisposition is now known to be general debility, which may arise from many causes. Any weakling has this predisposition, no difference what degree of health his parents enjoyed. All weak persons, especially the young, are liable to contract tuberculosis, if the three essential factors of infection are present, viz., debility, abrasions and bacilli.

The three essential factors of infection.—In the convalescence of typhoid fever, for example, we have two out of the three essential factors of infection. The same factors are present in the convalescence of measles and whooping cough, viz., debility and abrasions of the mucous membranes. The third essential factor of infection is easily supplied by the millions of tubercle bacilli which can be found in almost every public building, hospital ward, railway and, especially, the modern chariots of Juggernaut and centers of infection—the electric and cable cars, the floors of which are regular cuspidors.

That the bacillus discovered by Koch in 1881 is the specific cause of tuberculosis is not questioned by the medical profession at the present day. The principal routes of infection are the respiratory tract, mainly in adults, and the alimentary tract in children.

Two principal sources of infection.—That raw milk, and the air containing dried sputum, are the two important sources of tubercular infection is selfevident to any painstaking observer. The former may be held responsible for nearly one-fourth, and the latter more than one-half of all cases of infection. The large number of cases of abdominal tuberculosis in small children fed on raw cow's milk, is evidence of the importance of this source of infection. Marfan demonstrates the great danger of infection from sputum, in the following observation: Twenty-two previously healthy factory employes worked for many years together in one room. In the year 1878, two men suffering from ulcerative pulmonary lesions were added to their number, and these two latter expectorated freely on the floor. Between the years 1884-89, thirteen of the original twenty-two died of tuberculosis. Was this an accident or the plain result of the violation of a sanitary law?

Transmission of infection.—It is quite probable that infection is often carried from its original source to susceptible individuals by the common drinking cup, the common communion cup, cigar makers, careless barbers, money, handkerchiefs, kissing, the long skirts often worn by women, instruments, especially dental instruments, which often do not get even a rinsing with water until they have been used in several persons' mouths.

Vitality of the tubercle bacillus.—It will withstand freezing and dessication for weeks and months, and has been found alive after being buried two years. Koch produced tuberculosis by cultures nearly two years old. It should be borne in mind that the germs in fresh sputum or secretions are more virulent, that is to say, more likely to infect and harder to destroy, than after exposure to air and sunshine for several weeks. Nuttell found not only millions but billions of tubercle bacilli in the sputum of one patient in twenty-four hours.

Measures to prevent infection.—It has been estimated that about fifteen per cent. of milch cows are tubercular. The question arises, how is this source of infection to be controlled? The answer is, by destroying all infected animals as soon as a diagnosis can be made, and always sterilizing or boiling milk before using.

The physician is the guardian of health in the home, and it is his positive duty to teach his patrons preventative medicine. If he is grounded in the faith to a degree warranted by the facts, he can soon be the means of molding public opinion so that it would be decidedly unpleasant for any respectable person to be seen expectorating on any floor or sidewalk. Church-going people get along without expectorating on the floors of their places of worship, and this is evidence that all respectable people can do the same. Legislation, making expectoration on floors and sidewalks a misdemeanor, would control the vicious class.

A step in the right direction has recently been taken by the New York Board of Health. It directs the removal of carpets and mattings from the floors of cars and boats, and the placing of cuspidors containing suitable disinfectants where needed.

The rule should be absolute, forbidding any or all persons from expectorating on any floor or sidewalk.

Patients with ulcerative pulmonary lesions should not be allowed to expectorate in any place, either out or in doors, except in vessels containing suitable disinfectants.

Heat, solution of corrosive sublimate, 1 in 500 (acidulated with tartaric acid to prevent the coagulation of albumin), or carbolic acid, 1 in 10, will promptly destroy the tubercle bacillus.

Large, well-glazed cuspidors with perpendicular sides should be used (surrounded, if necessary, by screens) and cleaned daily, would protect public buildings and homes. Public conveyances to be protected by suitable vessels filled with sawdust, dampened with a 1 in 250 bichlorid solution. Patients with ulcerative pulmonary lesions should carry a small, wide-necked, glass-stoppered bottle containing a small quantity of the bichlorid solution for a pocket cuspidor, to be used only when out of reach of floor cuspidors. Handkerchiefs costing not over one-eighth of a cent apiece could be carried, in an emergency, and burned after using.

Patients should be instructed to rinse out their mouths frequently with warm water containing a little essence of wintergreen. This precaution to be attended to before eating, for the protection of the patient, and after expectorating, for the protection of others as well. Kissing should always be prohibited. It has been estimated that a patient in the ulcerative stage of pulmonary tuberculosis lives about two years. During this period he is a constant source of danger to his family and a menace to society. At a cost of not exceeding $50 and a little trouble, his sputum could be destroyed and his family largely protected from infection. Latent tuberculosis needs no precautions.

For the poor, hospitals especially designed for consumptives, and for their exclusive use, should be provided by the State as a matter of humanity, economy, and protection to the public health. The watchword should be, isolation for the patient who can not or will not be governed by the necessary sanitary regulations.

The disinfection of rooms and houses in which patients with ulcerative lesions live, or have lived, within two years, is a matter of vital concern. For this reason alone, tuberculosis should be classed by law with the infectious diseases, and be placed under the supervision of bureaus of health.

The Assembly of this Commonwealth now provides for the supervision by health officials of ten contagious and infectious diseases, viz., smallpox, diphtheria, scarlatina, typhoid fever, typhus fever, yellow fever, cerebro-spinal fever, Asiatic cholera, relapsing fever and leprosy.

The last two diseases in this list are so rare as to be almost a medical curiosity, yet were added to the list only last year; and an infectious and contagious disease which is the direct and primary cause of more deaths (14 per cent.) than all of the above ten, with measles and pertussis included, was omitted.

Ventilation is a much neglected measure of prevention. It has been estimated that each adult individual requires 3,000 cubic feet of fresh air per hour. In a room containing 1,000 cubic feet the air should be changed three times an hour to prevent the carbonic acid gas from rising above six parts in ten thousand.

Probably not one room in ten will meet this requirement. While only a fraction of a cubic foot of carbonic acid gas is thrown off by respiration, an ordinary small illuminating gas burner will throw off six cubic feet an hour. A natural gas stove, without chimney outlet, is one of the most pernicious air poisoners ever invented. It renders the air in an ordinary sized room unfit to breathe in a few minutes. The most efficient means of ventilation we have in the average home to-day is the old-fashioned fireplace. Provisions for the entrance of fresh and escape of foul air should be made near the floors and ceilings of every living room, in such a way as to avoid draughts. Permits for the erection of all buildings should specify that ample means be provided for ventilation, and official inspectors should see that the specifications are carried out. Electricity is to be the light and possibly the source of artificial heat in the near future.

The knowledge that we now possess of the pathology, the three essential factors of infection, the common sources of infection, the common routes of infection, the means at our command to prevent infection, ought and can stamp out, if acted on intelligently and promptly, more than one-half of the cases of tuberculosis in the next twenty-five years, and 90 per cent. of all cases in the coming century.

Sentiment in intelligent, sensible, respectable people can be aroused and cultivated. With the ignorant and vicious nothing succeeds like an absolute fiat.

H. H. HOLMES.

BY EUGENE S. TALBOT, M.D., D.D.S.
FELLOW OF THE CHICAGO ACADEMY OF MEDICINE.

That Herman Webster Mudgett, better known as H. H. Holmes, was a criminal *par excellence* is beyond doubt, but how far and in what respects he was a degenerate, in the accepted sense of the term, is worthy of serious consideration.

Few criminals have received more public attention, but despite this, many essential details of his history are wanting. Very little has been stated as to his heredity. He claims to have come from a respectable New England stock and to have been religiously and carefully brought up. As a boy he does not appear to have been a scapegrace, and no criminal charge is there on record against him. He married at 18 or 20 and commenced the study of medicine at Burlington, Vt. From there he went to the University of Michigan, where he claims to have graduated in medicine in 1884.

According to his own account, after graduating he taught school and practiced medicine in New Jersey for about a year, but it would appear that before this he had already, with a confederate, conspired to defraud life insurance companies, an industry he never entirely abandoned and which finally brought him to the gallows.

Just when he assumed the name of H. H. Holmes is not certain, but probably not long after this. He himself says it was done when he went before the Illinois Pharmacy Board in 1886. From that time he has been known by that name and under it started in business as a druggist in the outskirts of Chicago, where he went into rather extensive and complicated transactions, chiefly of a crooked character. He managed, however, to keep in fair standing with his neighbors, and at one time was actively interested in church and religious matters.

During this time he had abandoned his New Hamp-

shire wife and child, and without divorce, married in 1887 a Miss Belknap. Some years later in the same way he married a Miss Yoke in Denver under the name of Henry Mansfield Howard. He is supposed also to have contracted another bigamous marriage with Minnie Williams (one of his supposed victims). Beside these he had irregular relations with other women. In 1894, shortly before his final arrest for the murder of Pitzel, he revisited his old home and lived as husband for a few days with his first wife, to whom he told a romantic fiction anent his absence.

Between 1886 and 1894 there is no full account of his doings. They included an extensive series of swindles and forgeries. His transactions covered many parts of the country. He ranged from Canada to Texas and Colorado, often in trouble but generally managing in some way to escape the most serious consequences of his crimes. These were in their way often remarkable for their boldness and impudence. He negotiated for the sale to a gas company of a gas-

H. H. HOLMES.

making machine which was actually running on gas stolen from the company's own mains. He admits "deals of a somewhat similar nature."

While his confessions, generally, have been unreliable, it is probable that the above is safely inside the truth. He was emphatically a man of affairs, but his business transactions were so shady in their nature that the obscurity that enveloped them has been dispersed as yet only to give a glimpse such as the above.

It was during this period that he built his celebrated castle, with its secret chambers and passages, dark rooms, trapdoors, etc. Here he employed the female type-writers and other employes whose mysterious disappearance has done so much to make his popular reputation as a murderer. As far as this crime is concerned it must be admitted that the evidence against him is altogether circumstantial, his confessions and statements being notoriously and boastfully mendacious, in the main. Out of the twenty-seven murders he admitted in his latest confession shortly before his execution, the majority of the victims are still living. Even his dying admission that he had been responsible for the sacrifice of two lives from criminal operations can not be accepted as perfectly reliable, considering his character for untruthfulness. He seems to have had little or no regard for human life, and as a dealer in "stiffs" and a defrauder of life insurance companies his operations were often enough suggestive of murders, even if these were not often committed.

The history of the Pitzel case, where it appears he made away with his confederate and then later with three of his children, and seemed to be planning the deaths of the widow and remaining family, distributing the deaths about the country in such a way as to avoid suspicion, must be fresh in the mind of the reader.

Holmes in his personal appearance, like Wainwright (whom he much resembled in his criminal career), presented nothing specially repulsive in his appearance. He was quiet, mild in manner and voice, fairly well educated, neat in dress and could pass anywhere for a respectable business or professional man. During his long criminal career he appears to have had no particular ambition, except to succeed in his crooked operations and to ingratiate himself with women, for whom he seems to have had a more than normal inclination.

Mentally, there was no lack of acuteness. The fact that he managed to escape justice so long is an evidence of this. When he was finally arrested his behavior was peculiar and shifty. He told contradictory stories, and when his case came to trial he dismissed his lawyers and insisted on managing his own defense. Though he showed some aptness in examining witnesses, he was finally obliged to recall his counsel and give the case into his hands. The jury found him guilty almost without leaving the box. Perhaps the one witness whose testimony was most convicting was his latest bigamous wife.

Holmes made numerous statements and confessions to detectives and others and published a book while awaiting trial which purports to give an account of his life.

The most remarkable of these confessions, however, was that published in the Philadelphia *Inquirer* of April 12, three or four weeks prior to his execution. In this he reports the details of twenty-seven murders and claims that he was a case of acquired moral idiocy; that he presented numerous facial stigmata of degeneracy that had grown upon him, during his criminal career. Eighteen of the twenty-seven victims in this confession are living. Its author acknowledged its falsity within a day or two of its appearance.

It was not merely criminal vanity that prompted it, for he received for it a very substantial compensation of several thousand dollars. Throughout his imprisonment, his acquisitiveness was shown in this and other publications for which he received money, and in propositions of blackmail for persons he contemplated involving in these confessions.

While in Philadelphia, Jan. 30, 1896, I had the opportunity of making a careful physical examination of H. H. Holmes, with the following results:

The subject was a 35 year old American, 5 feet 7½ inches in height, weighing 150 pounds. The occiput was asymmetrical and prominent, the bregma sunken and the left side of the forehead was more prominent than the right which was sloping. The hair was brown, and on body and face excessive. The face was

arrested in development. The zygoma was arrested and hollowed on the right side.

The pictures of Holmes published in the daily papers and in his book, do not, to my mind, portray the features of the man as I saw him in his cell. Figure 1, comes the nearest as he appeared when I saw him. His face was cleanly shaven, except moustache, very thin and much emaciated, presenting the appearance of being in a decline, due perhaps to confinement and a tendency to consumption. He had a cough, and the chances are if he had been allowed to remain in confinement he would have succumbed to tuberculosis.

Figures 2 and 3 show the antero-posterior and lateral shape of head. The right ear was lower than the left. The nose was long and very thin; stenosis of nasal bone very marked. The septum deflected to left, nose to the right. The thyroid gland was arrested. Strabismus in left eye, inherited. The left higher than the right. Slight protruding of the upper jaw; arrest of lower. The mouth on the left side drops lower than on the right. The width, outside of first molars was 2. Width outside first bicuspids 1.62. Height of vault, 63.

Figures 4 and 5 upper and lower jaw. The alveolar process was normal with the exception of the process about the second molar on right side which was hypertrophied. The teeth were normal in size and shape, the third molar undeveloped.

Marked pigeon breast, left side more prominent

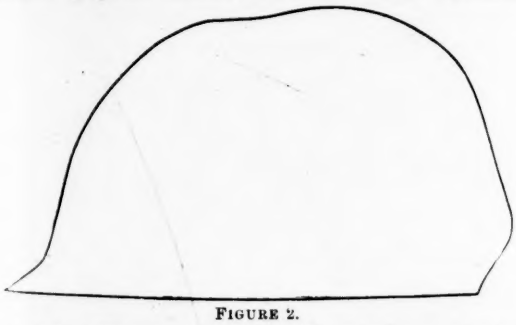


FIGURE 2.

than right. Chest arrested with tendency to tuberculosis.

Arms: Right normal. Left one and one-half inches longer. He was right handed. His legs were long and thin. The tibia flattened. The feet medium in size but markedly deformed. Depression on left side of skull at bregma, said to be due to fall of brick at age of 30. Sexual organs unusually small.

The jaws were unusually long as compared with the width, with a semi-saddle arch on the left side of the upper jaw. The molars of the lower jaw and left upper had been extracted in early life. The hypertrophy of the alveolar process, the want of development of the third molars and the general abnormal development certainly display a very unstable nervous system in his early life.

In twenty years' experience, I have never observed a more degenerate being from a physical standpoint. Holmes in his confession published, stated that ten years ago he was examined by four men of marked ability and by them pronounced mentally and physically normal and healthy. "To-day, I have every attribute of a degenerate a moral idiot." Is it possible that the crimes, instead of being the result of these abnormal conditions, are, in themselves, the occasion of degeneracy? . . . within the past few months these defects have increased with startling rapidity; as is made known to me by each succeeding examination," etc.

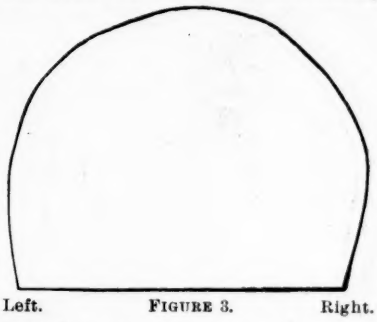
Holmes was examined ten years ago, not to ascertain stigmata but for life insurance, and the Bertillon system was not used at all since only criminals are thus examined, for identification. When these examinations are made, only one arm, finger and part of the body are measured, and not both sides for comparison.

While I was making my examination, I called his attention to a number of deformities which he was not aware he possessed.

Being a medically educated man, he certainly should have been better acquainted with these malformations, but he had evidently given this subject little attention since he was quite ignorant of the cause of two most marked deformities: The too deep depressions in the left frontal and occipital region of the head. These he claimed were due to a brick falling upon him at the age of 30. The marked deformity of the chest walls he claimed to be due to pneumonia.

Both deformities were stigmata of degeneracy. Holmes, since his confinement, had no doubt lost flesh, which made these deformities appear more prominent. That they had developed as a result of his criminal tendencies is perfectly absurd. They must have developed with the osseous system, which would be complete by the 26th year; nor will acromegaly account for them.

Holmes has been called an extraordinary criminal,



Left. FIGURE 3. Right.

but he certainly was no more of a criminal than Wainwright,[1] who was well known in his time as an essayist and better as a forger and murderer. From the standpoint of literary and artistic culture Wainwright stood higher than Holmes. Like Holmes, he attempted to defraud insurance companies and there is no doubt he poisoned a girl for this purpose. Holmes' habitual criminality was modified by his education and antecedents. He had sufficient ability and self-control to successfully pass for a respectable citizen and to keep his criminal transactions so distributed as to territory and covered that only the self-interested perseverence of a life insurance company prompted by a hint from an ex-prison acquaintance could reveal them. His mental defects, so far as they existed, seem to have been confined to his moral sensibilities. He apparently had none of that sense of moral dictation which is a part of the constitution of every normal individual. He acted entirely as an egotist, perfectly capable of appreciating the possible immediate consequences of his acts and more than ordinarily expert in managing in one way or another in avoiding them, but utterly lacking in even the utilitarianism commonly expressed in the old adage that honesty is the best policy. While the murders have mainly created his popular reputation, they were but incidents in his consistent criminal career. He had

[1] See Havelock Ellis' "The Criminal." p. 13.

no regard for others' rights or lives. Doing away with a mistress or a confederate when she or he become inconvenient was an easy matter to him. His education, his dissecting-room training and subsequent specialty helped to remove original superstitious fears that might restrain the average criminal. He seems to have been utterly lacking in any lasting or sincere affection or attachment. A man who could deliberately desert successively two wives with their children would be capable of abandoning others whose relations were less intimate.

Havelock Ellis remarks[2] that whatever refinement or tenderness of feeling criminals attain to reveals itself in what we should call sentiment or sentimentality. One of the characteristics of Wainwright's essays is their sentimentality. Himself, when in prison, he described as the possessor of "a soul whose nutriment is love, its offspring art, music, divine song and still holier philosophy." This sentimentality cropped up in Holmes in the letters to his first wife whose pathetic nature so impressed his counsel. It was also shown in his successes with women.

Holmes was certainly a degenerate physically, as the numerous stigmata he bore proved, but he was not more of one than many moral men and good citizens. There was, with the defects, undoubtedly a certain defectiveness and want of balance of the nervous system, but it can not be said that this necessitated the career he chose. If he were a "born criminal" it was not evident till after he had passed his minority and his moral imbecility did not apparently reveal itself to any very striking extent during his boyhood. He followed the course of many young men, who, on leaving the associations and restraints of home fall into evil courses, only he went farther and under pressure, it may be of want and misfortune, adopted to the fullest extent the anti-social and aberrant career of a criminal. There was, possibly, always a certain defect in his moral constitution which was checked in its effects by the restraints and training of his earlier years and might have been overcome entirely had his will been directed into proper paths. His case seems to be largely, if not altogether one of acquired moral obtuseness, not of complete congenital moral insanity.

FIGURE 4.—Lower.

FIGURE 5.—Upper.

His crimes were apparently all deliberate and cold-blooded. In his arrangement of his building, "The Castle," he made provisions for various kinds of crooked work. Only in this way can be reasonably explained this seemingly crazy piece of architecture. There is no evidence in his record that Holmes was insane in any way except it be morally.

In his apparent disregard for human life he was less peculiar than would at first sight seem. When a man has an object in view, which to him is a supreme motive, nothing will stand in his way. Holmes had no regard for the law if he could avoid its punishments, no conscientious scruples to govern his conduct. The taking of life was no more to him than to the Sultan of Turkey, a hanging judge or a military commander, who will sacrifice a forlorn hope to gain an advantage. It is not so improbable, therefore, that he may have been a more or less wholesale murderer, if he found people in his way. He may have disposed of his victims and regarded it only as an inconvenient necessity. There is nothing in his character to make this intrinsically improbable.

[2] The Criminal, p. 152.

How far he was handicapped morally by his constitution, is a question that can not be decided absolutely, but probably not more than the average criminal, who is generally of a more or less degenerate type.

It has been assumed that his vanity and egotism were excessive and evidence of his abnormal mental constitution. First, however. it ought to be proven that these existed to any such extent as is inferred. This can not well be done from his history. He was not obtrusive in his manner and his very choice of life made it impolitic, to say the least, to such publicity, and in his way he was very politic. He had ample confidence in himself, as was shown by his attempting his own defense. This may be taken as evidence of egotism, but he can hardly be said to have been obtrusively egotistic. His numerous statements in regard to himself were apparently not so much prompted by vanity as by a desire to make a profit from them. This was especially true of his last noted confession, which was one of the best remunerated productions of fiction based on fact that has been brought out in the country.

There was certainly one striking psychologic peculiarity about the man; lying seemed to come naturally to him. He did it sometimes apparently without object. In this, however, he was not altogether unique, but there are marked examples, never in their acts passing over the line of legality.

Summing up the character of Holmes, we would say that he was, first of all, a swindler, a *cheralier d'industrie* and a *roue*. Money and women seemed to be his objects in life, especially the former, and he was perfectly unscrupulous in his methods of gratifying his ruling passions. His professional and general education, which he seems never after the first failure to have attempted to utilize properly, only served to make him the more dangerous and probably aided to make him a murderer as well as a seducer, bigamist, forger and thief. He may have had some congenital deficiency in his moral make-up, but the absolute lack of moral dictation of his later life, was due to or greatly aggravated by his self-chosen environments.

TUBERCULOSIS OF THE MALE GENITAL ORGANS.

Read by title at the meeting of the American Surgical Association, at Detroit, Mich., May 26-28, 1896.

BY NICHOLAS SENN, M.D., PH.D., LL.D.

PRESIDENT OF THE AMERICAN MEDICAL ASSOCIATION, ETC., ETC.

CHICAGO.

(*Concluded from page 187.*)

Tuberculosis of the testicle and epididymis.—Except in cases of acute diffuse miliary tuberculosis the essential organ of generation in man is seldom the seat of primary tuberculosis. On the other hand, primary localization of the tubercle bacillus not infrequently takes place in the epididymis, when the infection often extends from here to the testicle. There must be vascular conditions or other local predisposing causes which are concerned in determining hematogenous infection of a tubercular nature in the epididymis which are absent or present to a lesser degree in the testicle. The epididymis is more often the seat of acute infective processes which prepare the soil for the bacillus of tuberculosis than the testicles which, to a certain extent, may explain the greater frequency with which primary tuberculosis occurs in the former than the latter. It must also be remembered that in descending tuberculosis from the upper portion of the urinary tract, the epididymis is exposed first to infection, and the patients often succumb to the primary disease and its complications before a sufficient time has elapsed for the testicle to become involved. There still prevails the greatest diversity of opinion among pathologists and surgeons in regard to the epididymis being most frequently affected in cases of urogenital tuberculosis.

Councilman (System of Surgery, Dennis, Vol. i, p. 246) believes that in such cases the most common seat of the primary disease is the epididymis. He says: "It may be confined to this or the testicle may be affected by continuity. The epididymis is converted into a more or less firm, caseous mass. From this the disease extends along the vas deferens, which becomes enlarged, and on section the interior is found to be lined with a whitish caseous tissue. In both the vas deferens and epididymis, the seat of the disease is primarily in the epithelium, and later takes the form of a tubercular inflammation. Seminal vesicles on the same side become affected in most cases, or they may be passed by and the disease appear in the prostate or bladder. Up to this point it is easy to see how the infection has taken place. The extension has been in the direction of the secretion, and the bacilli could be carried along with the secretion. From the bladder the extension is in a direction opposite to the flow of the secretion; with or without any involvement of the ureter, infection of the pelvis of the kidney and of the adjoining kidney tissue takes place. It is probable that the bacilli find suitable conditions for growth in the ureter and grow along the walls, just as on the surface of a solid medium, until the pelvis of the kidney is reached. There is no other way for infection to take place from the bladder to the kidney than along the ureter. There is no lymphatic or vascular connection. The proof that this is the usual route of infection in genito-urinary tuberculosis is shown by the certainty with which the disease can be traced step by step, and the extreme rarity of the disease in females as compared with males. In some cases the disease appears to be primary in the kidney and the infection may take place in an opposite direction."

My clinical experience corresponds with the views of Councilman that in more than 50 per cent. of urogenital tuberculosis the disease has its primary starting point in the epididymis.

We shall see in considering the etiology of this disease that there are many authorities who take the opposite ground and affirm that urogenital tuberculosis most frequently has its origin in the upper portion of the urinary tract.

Etiology.—Aievoli (Eriberto sur la tuberculosi di testiculo ed epididimo. Morgagni, p. 657, p. 728, 1891) made experiments on guinea pigs by injecting into the testicle and epididymis tubercular material and pure cultures of the tubercle bacillus. Only in one case did he find tubercle bacilli in the lumen of the seminal ducts, but in all instances there was produced an inter-canalicular proliferation, so that the walls of the canals were perforated and large masses with caseous centers were found in which pseudo giant cells could be demonstrated. In some places an attempt at cure by sclerosis could be found at the same time, also tubercle production in the vicinity of blood vessels and the interstitial tissue. He believes that such an inter-canalicular tuberculosis is possible without direct inoculation, as the bacilli may reach the interstitial tissue through the lymph stream. The results of these experimental reseaches are closely allied with the observations of pathologists concerning the gross pathologic anatomy of testicular tuberculosis. The disease in the epididymis is caused frequently by a descending infection from the prostate and seminal vesicles, but it may originate in the epididymis primarily, as tubercle bacilli have been found on several occasions in the seminal ducts in healthy testicles in phthisical subjects. The process begins in most cases in the epididymis in the form of conglomerate tubercles which are conspicuous for the number and size of the giant cells. The tubercle elements are derived mostly from the interstitial connective tissue, but part of the product may be furnished by the epithelial cells and other tissues of the seminal ducts. Infection may extend along the urogenital canal from the kidney to the testicle; as a rule, however, tuberculosis of the testicle begins in the epididymis. Sometimes the testicle and epididymis are affected simultaneously in cases of general miliary tuberculosis. "The fact that the spermatic-

artery divides when it reaches the epididymis may account for the localization of the disease in the latter organ; the slowing of the blood current always favors bacterial growth. Infection may also occur through the vas deferens. The conditions for localization of the microbes after their entrance into the urethra on their way to the vas deferens, are not so favorable as in the latter organ." (White.)

The predisposing causes are: Inherited soil, antecedent or coexisting disease of the testicle and trauma. The disease begins more frequently in the globus major than the opposite end of the organ. Later the testicle and its envelopes are invaded by direct extension of the infective process from the epididymis to those organs. Age appears to have a positive determining influence in the production of tuberculosis of the epididymis and testicle. Salleron ascertained the age in 47 cases of tuberculosis of the testicle with the following result: 20 to 30 years, 36; 30 to 40 years, 6; 40 to 50 years, 4; 50 to 60 years, 1; total 47.

It appears that tuberculosis of the testicle is most prevalent during the most active period of sexual function, that is, in patients from 20 to 30 years of age. Kocher remarks that the disease frequently occurs in young men soon after marriage. This corresponds with my own personal observations.

Julien (De la tuberculose testiculaire. Arch. Gén. 1890) reports 17 cases of tuberculosis of the testicle in children in the service of Lannelongue. Of these six were less than two years of age; the remaining patients were from two to thirteen years old. Heredity could be traced in four of ten cases. The diseases often appears in the acute form or at least with symptoms of a subacute orchitis. In twelve of these cases the spermatic cord was affected. In four cases the affection was complicated by hydrocele of the tunica vaginalis, and in one case the prostate and vesiculæ seminales were implicated. In children there is little, if any, tendency to the extension of the disease to other organs. The affected organ is generally destroyed either by ulceration or absorption, a complete *restitutio ad integrum* being rare. In spontaneous cases the organ atrophies and is usually covered by a pale, adherent scar. Hutinel and Deschamps (Etude sur la tuberculose des testicules des enfants. Arch. Gén., p. 257, 1891) maintain that tuberculosis of the testicle in children is by no means infrequent. In children the disease occurs most frequently in the form of an acute infiltration. It is seldom a primary affection, but forms a part of a general diffuse tubercular process. The peritoneum especially is frequently involved. The chronic form is often overlooked because it occurs as a chronic, painless induration. Otherwise the disease resembles the same affection in the adults, resulting in caseation and abscess formation. It is only in such cases that the authors favor an operation. The results of castration in children are not encouraging. These authors are more inclined to conservative treatment by local applications and internal medication.

Rintelen (Ueber Hodentuberculose mit Berücksichtigung des Doppelseitigen Auftretens derselben. Inaugural Dissertation, Würzburg, 1881) collected twenty-five cases of double tuberculosis of testicle beside six cases which he saw in Rosenberger's clinic. In fifteen of these sufficiently accurate data could be obtained in reference to the course of the disease. The right testicle was affected first ten times; in the remaining cases the disease commenced in the left testicle. In only one of these cases was the patient less than ten years of age. Three of the patients were from 20 to 30 years old, six from 30 to 40, and fourteen more than 40. Of the last number most of the patients were between 50 and 60 years of age.

Reclus (Du tuberculose du testicule et de l'orchite tuberculeuse. Thèse. Paris, 1876) is of the opinion that tuberculosis of the testicle can exist as a local affection without any tendency to dissemination, local or general. Clinical observation has shown that in about one-half of all cases of testicular tuberculosis pulmonary phthisis is absent, while autopsies show that the lungs are not implicated in about one-third of all the cases. In about 50 per cent. of all the cases the disease is met with in persons before the age of puberty, while it is found in about 2.5 per cent. of all patients suffering from pulmonary tuberculosis in persons over 15 years of age.

As exciting causes most authors enumerate traumatism and chronic gonorrheal inflammation in the posterior portion of the urethra and the epididymis. Cryptorchism is mentioned by Nepveau and Kocher as one of the most potent of the exciting causes. Gonorrheal epididymitis is mentioned frequently as a precursor and often imparts to the tubercular process a very malignant type. Such a case is reported by Birch-Hirschfeld. (Archiv f. Heilkunde, 1871, H. 6.) A soldier, 24 years of age, who was in perfect health, contracted gonorrhea, which led to acute epididymitis. In the course of eight days he died of miliary tuberculosis. Miliary tuberculosis is found in the peritoneum, especially well marked at the internal inguinal ring on the side of the affected testicle; miliary tuberculosis of the pleuræ, lungs, meninges, liver, spleen and kidneys. The epididymis was found transformed into a cheesy mass. In the testicle itself numerous intercanalicular miliary tubercles were found and a few cheesy nodules the size of a pin. According to Salleron (Arch. Gén. de Méd., July and Aug., 1869), of fifty-one cases of tuberculosis of the testicle, four times the testicle was affected, thirty-seven times one epididymis, ten times both epididymes. With the exception of tuberculosis of the remaining genito-urinary organs, he saw tuberculosis of other organs only in one case. Only in two cases did the disease prove fatal. Of forty-seven cases, thirty-six were from 20 to 30 years of age. It will be seen from the statistics that have been quoted that while no age is entirely immune to tuberculosis of the epididymis and testicle, the disease occurs most frequently in men from 20 to 30 years of age, at a time when the sexual organs are in a state of highest physiologic activity. As exciting causes figure most prominently gonorrheal epididymitis and traumatism.

Sir Astley Cooper in his classical work (Observations on the Structure and Diseases of the Testis. London, 1841, p. 162) gives the following pathologic description of what he called scrofulous inflammation of the testis: "Upon examining the epididymis and testis, when affected with this disease, I have found a yellow spot in the former, surrounded with a zone of inflammation. When the spot ulcerates in the center, the matter which it contains is not pure pus, but it is composed of fibrin and serum, with a slight yellow tinge. I have seen such spots in the globus minor, but more frequently seated in the globus major of the epididymis. In the testis there are generally several similar spots, accompanied by the same inflammatory zone; and yellow streaks are also found amidst the

tubuli. Scrofulous abscesses in the testis are sometimes accompanied by a granular swelling, like that which exists in the simple chronic diseases."

That the tubercular nature of the majority of cases of chronic inflammation of the testis has been admitted only for a comparatively short time is evident from a paper written in 1870 by B. Beck (Zur Käsigen Infiltration und multiplen Abscessbildung des Hodens. *Deutsche Klinik*, No. 1 u. 2, 1870). He insisted that it would become necessary to separate from what had formerly been included under the head of scrofulous affections of the testicle some cases which were of a tubercular nature. The tubercular form of orchitis he claimed seldom, if ever, existed as an isolated affection; the complicating tubercular affections in other organs he regarded as an important diagnostic aid in differentiating between the tubercular and scrofulous forms of inflammation of the testicle. Miliary nodules of the testicle he saw only once in the case of a child who died of miliary tuberculosis.

Pathology.—The naked eye morbid appearances of tubercular epididymitis and orchitis are fairly well understood by the mass of the profession. We find there as elsewhere the same retrograde metamorphoses of the tubercular product, coagulation-necrosis, caseation, and in the majority of cases liquefaction of the caseous material, only exceptionally arrest of the disease and calcification of the degenerated products of the tubercular inflammation. Some doubt still remains in reference to the primary starting point of the inflammatory process and the histologic structure of the tubercle tissue and the manner of local dissemination of the disease. Reclus (Du Tubercle du Testicule et de l'Orchite Tuberbuleuse. Thèse, Paris, 1876) makes a sharp distinction between tuberculosis of the testicle and the epididymis. According to this author tuberculosis of the latter nearly always occurs in the caseous form. Occasionally it presents itself in a reticulated form, composed of the sections of the dilated convoluted tubules of the epididymis, the caseous contents of which has fallen out. Very often the vas deferens is affected, but according to Reclus never farther than 5 to 6 ctm. from the epididymis, an observation which does not correspond with the author's experience, who has repeatedly found the entire cord involved from the epididymis to the seminal vesicles.

Reclus recognizes the independent localization of the tubercular process in different parts of the genital tract and places little weight on the descending or ascending theory of the infective process, as he has repeatedly found tubercular nodules of the same age and size in the epididymis and prostate. In 79 cases he examind *in vivo*, he found the disease unilateral in 21, while the seminal vesicles were invariably affected on both sides. That this observation is not entirely reliable becomes very evident from Fenger's case related above. It is generally conceded that the epididymis is much more frequently affected than the testicle because reliance was mainly placed upon the results of clinical examinations. In thirty-four autopsies Reclus found the epididymis affected singly in only seven instances, twenty-seven times simultaneously with the testicle. Tuberculosis of the testicle without a similar affection of the epididymis is an exception, as he found only three such cases in literature. In the testicle the tubercular process is met with either in the form of caseous foci, miliary infiltration, or both forms are combined. The arrangement of the tubercles is usually symmetrical, corresponding to the division of the seminal tubules. The nodules are generally found in the periphery of the organ, while the caseous foci are centrally located. Fibrous tubercles which pursue a chronic course are also found in the testicle. Microscopic examinations have satisfied Reclus that the miliary form can not be separated so easily from the caseous variety as taught by Virchow. With Malassez, he locates the primary nodules in the walls of the seminal tubules, and not as was done by Tizzoni, Gaule and Steiner, in the inter-canalicular connective tissue. He was able to remove the nodules when he resected portions of the seminal ducts showing their connection with the ducts. He believes that the process begins in the endothelial envelope which surrounds the tubules, which according to Ranvier, constitutes a continuous sheath of all tubules, and maintains that the interior of the lumen is affected secondarily. During the progress of the disease "granulations composées" are found which can only be isolated with portions of several tubuli seminiferi. While this histologic process is regarded by the author as characteristic of testicular tuberculosis, in the epididymis the process begins in the subepithelial elements of the tubules. The microscopic appearances of tubercle tissue in the parenchyma of the testicle is the same whether the disease occurs as a primary affection, or in consequence of extension from the epididymis. In the primary form the foci are few and large, varying in size from a hazelnut to that of a walnut. During the early stages of the disease the nodules are much firmer than the surrounding normal parenchyma of the organ. The mass is surrounded by a vascular zone. Central caseation, softening, abscess formation and perforation often follow in quite rapid succession. If the disease of the testicle is secondary to tuberculosis of the epididymis the nodules are more numerous and the disease presents more the appearance of an infiltration. The tubercles are found between the seminal tubules which are separated from each other by the tubercular product. The interstitial connective tissue as well as the adventitia are infiltrated with small round cells. The vascularity of the affected part is at first increased, but as the nodules increase in size the vessels disappear in the center and with them the tubules. According to Rindfleisch, only the adventitia disappears, while the propria becomes edematous, but remains and can be identified in the cheesy product for a long time.

Curling (On Diseases of the Testis, Philadelphia, 1878, p. 335) in the later addition of his work has expressed the opinion that the disease is originally developed within the tubules of the testicle, and the result of microscopic examinations have induced him to adopt this view. He continues and says, "Anatomic considerations indeed support the opinion that abnormal nutrition in the cellular contents of the tubes induces the formation of miliary tubercles in their walls without at all negativing the development of tubercle in the intertubular tissue as seen by Virchow, or in the adventitia of the blood vessels as observed by Nepveau. Indeed, the discrepant views upon the matter may be explained by assuming that different observers have regarded what has been found in particular cases as the result of some general law. With reference to this the suggestion of Klebs is valuable. Admitting that in acute miliary tuberculosis where

the dissemination of the virus is effected by the vascular system, the blood vessels and their surroundings are the seat of the tubercles, he has seen preparations by Langhans where the tubercles were in the interior of the tubule, and Klebs adds that "It would be very desirable to ascertain whether this was uniformly the case in the so frequent extension of tuberculosis from the older nodules in the epididymis to the body of the testis."

Salleron (Mémoire sur l'affection tuberculeuse des organes génitaux de l'homme. Archiv Gén. de Méd., July and August, 1869) as early as 1869 observed in his military practice fifty-one cases of tuberculosis of the testicle. The testicle itself was affected only four times, the epididymis on one side thirty-seven times, on both sides nineteen times. Only in one case was he able to ascertain *intra vitam* the existence of pulmonary tuberculosis, a fact which is in opposition to the experience of Curling and Louis, but which he supported by nine accurately reported cases and two autopsies. With the exception of the vas deferens and the seminal vesicles, he found the remaining portion of the urogenital tract free from tuberculosis.

Years ago Friendländer found miliary tubercles in the testicle in cases in which no other organ was found affected. (Sammlung Klinischer Vorträge, 1873). Nepveau (Contribution à l'étude les tumeurs du testicule, Paris, 1872) found miliary tubercles upon the walls of blood vessels in diseased testicles complicating secondary renal and primary pulmonary tuberculosis.

Rindfleisch calls attention to the unusual size of tubercles in tuberculosis of the testicles which, according to his observation, vary from the size of a pin's head to that of a walnut. In the testicle the first infiltration usually shows itself as fibroid tubercle, as a light yellow or grayish white hard and tough nodule in the parenchyma of the organ. In miliary granulations the tubercle appears under the microscope as described by Langhans, in the center a giant cell, around this epitheloid cells, and in the periphery a small round celled infiltration, the cellular elements imbedded in a reticulum of connective tissue. Kocher (Krankheiten des Hodens, Nebenhodens und Samenstranges. Pitha u. Billroth, Bd. III, p. 3, B. p. 273) is also of the opinion that the primary starting point of the disease in the epididymis is in the intertubular connective tissue. The contents of the tubules are increased by proliferation of the preëxisting tissues of their walls. The infection begins most frequently in the globus major and extends from here to the remaining parts until the entire organ is transformed into a hard nodular mass. Cheesy degeneration of the contents of the tubules results in destruction of their walls and coalescence with the intertubular products, when a tubercular abscess forms which frequently ruptures spontaneously.

Gaule (Anatomische Untersuchungen über Hoden tuberculose. *Virchow's Archiv*, Bd. lxix, pp. 64 and 213, 1887) regards tuberculosis of the testicle as a catarrhal inflammation of the epithelial lining of the seminal tubules which leads to stagnation of the secretions and caseous degeneration of the inflammatory product which, owing to the thinness of their walls, are prone to undergo ulceration. According to this author the process begins in the epididymis and later extends to the testicle, where it assumes another character, as the intertubular connective tissue soon takes part in the process of tissue proliferation. In the epididymis the process is apt to remain circumscribed and favorable to the development of a fibrous nodule limited to the interior of a single tubule. While the contents of the nodule may undergo caseation, the existing irritation extends to the adjacent intertubular tissue and gives rise here to fibrous products frequently in the vicinity of the septa. Later adjacent tubules are included in the process and undergo similar changes, constituting the condition described by Reclus as "granulations composées." The local and general dissemination of tuberculosis of the testicle and epididymis are well shown by the observations of Guyon. (Clinique des maladies des voies urinaires à Necker. La Castration pour Sarcocele; Ann. des mal. des org. gén. urin. p. 445, 1891.) He found in twenty-eight postmortems on persons the subject of tubercular disease of the testicle that the lungs were affected in only eleven. In 222 clinical observations on patients suffering from urogenital tuberculosis which he examined during a period of twenty-five years, forty were cases of isolated genital tuberculosis, seventy-four of the urinary organs, and only 108 of combined urogenital tuberculosis. Of forty-two additional postmortems, one was a case of isolated genital tuberculosis, fourteen cases of combined tuberculosis of the urinary organs, and twenty-seven of combined urogenital tuberculosis. Seldom is the testicle or epididymis the only part affected. He believes with Lanceraux that the tubercular process begins very frequently in the vesiculæ seminales. In thirteen cases all of the genital organs were affected. In 127 clinical cases in persons before the age of puberty, suffering from urogenital tuberculosis, the prostate was affected fifty-six times, prostate and seminal vesicles eleven times, the epididymis alone two times, all of the genital organs fifty-eight times. Among these there were two cases in which it could not be positively ascertained that the prostate was involved and the same uncertainty existed in reference to the seminal vesicles in six cases. According to these statistics the course of the disease in men is therefore more in the direction from within outward than from without inward, a fact which Guyon advances as a warning against the too frequent performance of castration. Not infrequently the tubercular affection extends from the epididymis or testicle to the tunica vaginalis.

Simmonds (Ueber Tuberculose der Scheidenhaut des Hodens. *Deutsche Zeitschrift f. Chir.* Bd. xviii, p. 157) made a careful examination of eight tubercular testicles obtained from six patients operated upon in the clinic at Kiel, and postmortem specimens obtained from the hospitals at Hamburg, in all twelve testicles. In eight of these specimens tubercles were found in the tunica vaginalis, in one case the testicle was atrophied, while in three specimens the tubercular process was not far advanced. These cases appear to prove the incorrectness of the statement made by Klebs that the tunica vaginalis is never affected, at the same time they call the attention of the surgeon to the necessity of examining the tunica vaginalis carefully and subject it to operative treatment, if the disease has extended to it in cases of tuberculosis of the testicle treated by castration.

Symptoms and Diagnosis.—Tuberculosis of the testicle and epididymis is a very insidious disease. It is often overlooked by the patient for a long time and frequently erroneously diagnosticated by the physician. In the absence of tuberculosis of other por-

tions of the genital organs and the urinary tract, the disease usually begins in the globus major of the epididymis, much less frequently in the body or opposite pole of the organ, as a hard, almost painless, swelling. During the progress of the disease additional nodules form and very frequently the patient's attention is attracted by a more rapidly increasing swelling, a complicating hydrocele. The absence of any well marked symptoms during the incipiency of the disease is the reason why such cases come so rarely under the care of a surgeon at this time. From the globus major the disease spreads to the body and globus minor and then extends along the vas deferens.

After an elaborate description of the signs and symptoms of scrofula, Sir Astley Cooper (Op. cit. p. 160) gives a very vivid clinical picture of what was then considered as scrofula of the testicle in the following language: "One of the testicles, even in very young children, sometimes becomes enlarged and very hard, but without pain or any other inconvenience, and the disease is accidentally discovered by the parents or servant. In this state of indolent increase it remains for many weeks, months or years, and then, under improvement of the general health, the enlargement subsides and the gland resumes its former state. More frequently it enlarges at the age of puberty, and from that period to twenty years, and not infrequently this disease appears in both testes, marked by the same hardness, and such absence of suffering, that the person does not for a length of time seek any medical aid respecting it. The part is free from pain as well as tenderness. The scrotum is unaffected; its veins are not enlarged; and, but from its bulk, the patient suffers no inconvenience, but even in children, although more frequently at puberty, the inflammation sometimes proceeds to suppuration; this generally occurs within the globus major of the epididymis, but I have known abscesses form in the cauda or small extremity of that organ. The body of the testicle but rarely suppurates, until after the epididymis has ulcerated, when the testis becomes affected and the scrotum puts on a livid hue. Ulceration next ensues, indicating the presence of an abscess, which discharges ill-formed pus and some semen; if after the age, the opening under these circumstances is extremely difficult to heal, continuing for months and even for years before it closes. In some persons one abscess after another forms and discharges, and when one testis has suppurated, if the other has been hard, it is liable to put on the same action, discharges itself and continues equally obstinate, resisting all the means of treatment for a greater length of time. Ultimately the testes diminish, secrete but a small quantity of semen, and they continue to waste until but little of them remains and their function almost entirely ceases." Astley Cooper and his contemporaries had no correct idea of the intrinsic tendencies of tubercular inflammation of the testicle to extend to the remaining organs of the genital tract and the urinary apparatus. The essential clinical features of this disease have been elaborated since their time.

Reclus (Op. cit.) is of the opinion that chronic orchitis and epididymitis are often confounded with tuberculosis. The abundance of interstitial connective tissue produced in the course of these affections leads constantly to progressive atrophy. These conditions are often characterized by a nodular condition of the swelling which resembles so closely tuberculosis. They occur either in the course of an acute, or begin as a chronic process. Usually, however, the swelling is much more marked than in tuberculosis. If the testicle alone is affected it finally is reduced in size to that of a bean behind the normal epididymis. Kocher regards as the most characteristic symptoms of tuberculosis of the testicle and epididymis rapid development of swelling and early softening of the inflammatory product and the absence of acute subjective symptoms. According to this writer the maximum swelling is often reached in eight days, or at least in a few weeks which soon softens and perforates, resulting in the formation of a fistula which may continue for years, the swelling remaining stationary. Kocher's observations in regard to the acuity of the local development do not correspond with the result of my own experience. Such a course is an exceptional one.

Barling (Double Acute Tubercular Disease of the Testis, London *Lancet*, April 9, 1892) describes a case of double galloping tuberculosis of the testicle, an affection to which Duplay called the attention of the profession as early as 1876. The patient was 30 years of age, who five hours after a severe external injury noticed quite a large swelling of one of the testicles. One of the interesting features in this case was the fact that the epididymis was free, the disease being limited to the testicle. In a short time the opposite organ became similarly affected. Examination of the testicles after castration showed in each of them cheesy cavities, a large one in the right and a number of small ones in the left. The immediate vicinity of the cavities was occupied by a dense and greatly increased connective tissue. In one place in a cavity tubercular bacilli were found, but the most patient search did not result in finding giant cells. The whole process was characterized by an infiltration with granulation and epithelioid cells combined with catarrh of the seminal tubules, followed by caseation. I can readily understand that in the event tuberculosis develops in a testicle or epididymis the seat of an injury or antecedent inflammatory disease, that it might in rare cases pursue such an acute course, but in the majority of cases it is noted for its insidiousness and chronicity. The patient's attention is usually first attracted by slight pain or discomfort and tenderness in some part of the gland, generally the epididymis, which on examination is found to be somewhat enlarged, prominent, nodular and indurated. The state of the testicle is often marked by circumscribed effusions of fluid in the tunica vaginalis, the surfaces of this membrane being partially adherent. The disease often remains stationary for months, a year or more. During the course of the disease one of the prominences begins to increase, so as to be observed externally, and to feel more painful and tender; the skin over it becomes adherent, changes to a livid color and ulcerates, when the softened cheesy material is evacuated. The abscess formation is generally followed by a fistula which communicates with the primary tubercular focus. Similar changes may take place in other parts of the testicle, resulting in two or more sinuses leading into the interior of the gland. If all of the tubercular material is eliminated in this manner, the sinuses after a long time may heal, leaving the testicle usually in an atrophied condition. The disease may remain limited to one testicle, or after months or years make its appearance in the opposite organ. As a rule, the vas deferens is early

affected, the infection often extending its entire length in a short time. In primary tuberculosis of both testicles both vasa deferentia may remain intact. The tunica vaginalis is usually implicated in the form of an adhesive periorchitis. As this affection is not attended by any well-marked clinical symptoms, its existence can be surmised by the appearance of hydrocele. The hydrocele, usually of a serous type, may attain a considerable size, but more frequently it is circumscribed. In rare cases the vaginalitis is of a suppurative type, and then makes its appearance under the clinical picture of an acute abscess. Tubercular affections of other organs precede or occur simultaneously with the tubercular orchitis. Next to the vas deferens the disease extends most frequently to the seminal vesicles, next the lateral lobes of the prostate are most frequently implicated. From here the disease is prone to involve the urinary organs, first the bladder, next the ureter, and finally the kidney.

In the differential diagnosis must be considered acute and chronic inflammations of another type and syphilitic affections. In tuberculosis the swelling in the epididymis is usually larger than in other forms of inflammation. Tenderness and pain are conspicuous symptoms in gonorrheal epididymitis, absent or slight in tuberculosis. If any doubt exists in the diagnosis between gumma and tuberculosis the patient should be given the benefit of the doubt, and should be subjected for a sufficient length of time to an active antisyphilitic treatment. The tubercular inflammation is clinically characterized by periodic exacerbations. Examination of the remaining genito-urinary organs for tuberculosis, as well as the more distant organs in which this disease is liable to appear, is absolutely necessary and will often clear up a doubtful diagnosis. In tuberculosis the indurated vas deferens is not tender to pressure and is usually nodular, while funiculitis caused by other forms of infection is attended by pain and tenderness.

Treatment.—The rational treatment of tuberculosis of the testicle and epididymis must necessarily depend on the location, stage and extent of the disease, and the existence or absence of complications. In miliary tuberculosis involving the organs on both sides, the treatment must be supporting and expectant, as in such cases a speedy fatal termination is inevitable from the primary pulmonary affection or diffuse miliary tuberculosis. In tuberculosis involving other parts of the urogenital organs the treatment must be directed accordingly. Tuberculosis implicating the organs on both sides simultaneously, or in succession, is almost positive proof of the existence of an older tubercular process in some other organ, or the extension of the tubercular process along the genital tract beyond the reach of successful surgical treatment. The cases best adapted for successful local treatment are those in which the disease appears as a chronic affection and is limited to the organs on one side, with limited or no extension along the vas deferens. Tuberculosis of the epididymis leads to impotence if both organs are affected. If the disease is limited to one side, function may remain unimpaired. Castration must therefore be regarded as the normal procedure in cases of uncomplicated, unilateral tubercular epididymitis. This statement becomes more apparent and forcible when we consider that reinfection can always occur if the diseased organ is permitted to remain. As positive contraindications to castration must be considered the following:

1. Extension of the tubercular process to parts not within reach of a radical operation.

2. Tuberculosis of both testicles, as the second organ is usually involved by extension of the infection from one to the other through the vasa deferentia.

3. Tuberculosis of important adjacent or distant organs.

Castration may become necessary as a palliative operation for the relief of symptoms in cases where the disease has resulted in the formation of tubercular abscesses and suppurating sinuses. A great diversity of opinion still prevails among surgeons regarding the value of castration in the treatment of tuberculosis of the testicle and epididymis. The results following this operation appear to have been quite at variance in the hands of different operators.

Terillon (Essai Critique sur la traitement de la tuberculisation du testicule. *Bull. Gén. Thérap.*, p. 140, 1882) favors castration, and advises that the operation should be performed before abscesses have formed, as by removing the source of suppuration the general condition of the patient is improved. He regards pulmonary tuberculosis as an absolute contraindication to castration. Simultaneous tuberculosis of the prostate and seminal vesicles may or may not be regarded in the same light, according to circumstances. Richet is nearly of the same opinion in reference to the indications for castration, only he opposes the operation more decidedly when extension of the disease to other parts of the genital tract has occurred.

Stenger (Inaugural Dissertation, Berlin, 1889) gives the result of thirteen cases of castration for tuberculosis of the testicle which occurred in the Royal Clinic at Berlin from 1883 to 1889. Seven of the patients remained free from local recurrence or evidences of infection of any other organ at the time the report was made. In three of the cases tuberculosis of other organs existed at the time the operation was performed, and in the last three cases the final result could not be ascertained. In seven other cases the tubercular product was removed by vigorous use of the sharp spoon, in five with a satisfactory result, and in two pulmonary infiltration existed at the time the operation was performed, which progressed uninfluenced by the operation. From a study of these cases he came to the conclusion that the timely removal of the diseased organ, or a thorough local operation, is instrumental in preventing general infection.

Finkh (Ueber die Endresultate der Castration bei Hodentuberculose. *Beiträge zur Chirurgie*, Bd. ii, p. 407) has ascertained the ultimate results in twenty-nine cases of tuberculosis of the testicle treated in Bruns' clinic at Tübingen by castration. Of these cases the right testicle was affected twelve times, the left eight times, and nine times both testicles were diseased. At the time the report was made in 1886, fourteen were living and free from relapse or tubercular disease of any other organ. Among these were nine in which one testicle was removed and five double castrations. Of those that died, eight succumbed to non-tubercular affections. Of these five were single and three double castrations, the former with a period of immunity varying between three-fourths to twenty-two years, the latter with from five to thirty years. To these must be added a case of double castration in which death occurred twelve days after operation from exhaustion. Six died of tuberculosis, all single castrations, and of these only in one case did the dis-

ease extend to other parts of the genital tract. In one case life was prolonged for four years, and against the six who died of tuberculosis stood thirteen who remained well after five years and more. The infected pelvic portion of the cord furnishes, according to this author, no contraindication to an operation, as in seven cases in which this condition was found the result of the operation proved satisfactory. These results are certainly more favorable than those which are obtained by the average surgeon. In my own cases I have frequently observed relapse in unilateral castration, and in two cases of double castration the disease, after a year or two, attacked the seminal vessels, prostate and bladder, and finally death resulted from tubercular pyelonephritis.

It seems to me that the cases are exceptional in which double castration is justifiable. Castration appears to have yielded satisfactory results in cases in which the disease was unilateral and the testicle was removed before the disease had extended to other parts of the genital organs. The reports of a number of cases in which the disease was unilateral and complicated by tubercular vesiculitis, treated by castration and excision of the seminal vesicles and even a portion of the prostate, resulted favorably. In the removal of a tubercular testicle it should be taken for granted that the vas deferens is infected, and as much of this structure as possible should be excised.

Conservative operations of different kinds have been made for a long time in the treatment of the so-called scrofulous testicle. Malgaigne excised caseous nodules with the bistoury; Delpech, Boyer, Velpeau, Bonnet and Bouisson gave preference to chemical caustics, such as chlorid of zinc, caustic potassa and Vienna paste. Later Verneuil recommended the actual cautery which was replaced later by the Paquelin cautery. The use of the thermo-cautery is strongly recommended by Forgue and Reclus (Traité de Thérapeutique Chirurgicale T. ii, p. 912) in cases in which the cheesy deposits are few or single. The same authors are in favor of iodoform-ether injections 10:90 when the affection is more diffuse. A few drops of this solution are injected into each nodule and the little punctures sealed with iodoform collodium. In cases not amenable to conservative treatment they recommend without hesitation castration. I have used for some time parenchymatous injections of iodoform glycerin emulsion during the early stages of tubercular epididymitis with the most satisfactory results. With a small trocar the epididymis is penetrated from end to end and the injection made slowly as the canula is withdrawn. Under moderate pressure from one drachm to a drachm and a half of the emulsion can be injected, thus permeating the affected tissues with the anti-bacillary agent. The injection should be repeated every week or two. If the disease is complicated by hydrocele the fluid should be evacuated and a small quantity of emulsion injected. The pain following this treatment only lasts for a short time. For a few days the swelling increases and tenderness is more marked. The increased tissue proliferation which is excited by the action of the iodoform is a potent element in arresting the extension of the disease and in preventing further degenerative changes in the tubercular tissue.

Terillon (De l'intervention chirurgicale dans la tuberculose testiculaire. *Progrès Méd.*, No. 3, 1886) has given evidement and iodoform gauze tamponnade a fair trial in the treatment of tuberculosis of the epididymis advanced to the stage of abscess and fistula formation, but on the whole he gives castration the preference as he believes evidement, cauterization and drainage as a rule yield only temporary beneficial results.

Keyes (*Annual of the Universal Medical Sciences*, 1892, Vol. III, page 3.) removed by means of the curette the whole tubercular epididymis, a section of the spermatic cord being then found to be extensively ulcerated; an inch and a quarter of that was removed. The function of the testicle had been already destroyed by cheesy foci along its course, and the patient knew he was practically castrated before the operation was undertaken, but he was much more pleased with the result than if the testicle had been removed. The wound healed rapidly by first intention, the relief of the patient being complete.

Villeneuve (*Marseille Médicale*, July 30, 1889) prefers thorough cauterization with the Paquelin cautery to castration in the treatment of tuberculosis of the testicle. He cites cases and defends his position by what appears to be plausible reasoning. Kocher uses the sharp spoon, followed by the application of a solution of chlorid of zinc 1: 4, or repeated applications of the strong tincture of iodin when the disease has advanced to the formation of abscesses and fistulæ.

Lannelongue speaks highly of a solution of a chlorid of zinc as a parenchymatous injection before suppuration has occurred. The injection is made around and not into the tubercular infiltration.

Ozenne (*Gazette des Hôpitaux*, Feb. 23, Aug. 9, 1893) reports success in one case of tubercular epididymitis and favorable progress in a few others, from injections of 10 per cent. solution of chlorid of zinc, after the method of Lannelongue. In the successful case he injected at four sittings in seven different places of the diseased area, 2 drops at each puncture. Moderate, temporary reaction followed. Some months later, one little tubercular nodule remaining, a single injection was given. After the last treatment all active signs of the disease disappeared. From what has been said on the treatment tuberculosis of the testicle it is evident that this subject remains an open chapter. In recent cases of primary tuberculosis parenchymatous injections of iodiform glycerin emulsion or chlorid of zinc deserve a trial. If this treatment does not prove satisfactory after a fair trial, castration should be performed before the disease extends to additional organs. In limited abscess formation the use of the sharp spoon and iodoform gauze tampon may prove efficient, but if the disease resists these measures castration is absolutely indicated. If the disease is bilateral palliative treatment should take the place of a radical operation in the majority of cases. Castration is positively contraindicated when the tubercular affection of the testicle is complicated by tuberculosis of any important internal organ. Simultaneous tuberculosis of the prostate and seminal vesicles does not necessarily contraindicate castration.

Cascarin as a Substitute for Cascara Sagrada.—Cascarin is the active principle of the bark of the rhamus purshiana, and is analogous to, if not identical with, the frangulin contained in the bark of the frangula. Schoenlaub recommends it as a substitute for cascara sagrada in habitual constipation, one to four pills at night, each 0.1 gram. It produces a sure and certain effect, while it never gripes.—*Nouveauv Remèdes*, June 8, from *Swiss Woch. f. Chem. and Pharm.*, No. 12.

MALARIA.

BY ELLSWORTH D. WHITING, A.B.
AURORA, ILL.
(The L. P. C. Freer Prize Essay, Rush Medical College, 1896.)

(*Continued from page 210.*)

In describing the quartan parasite the writer will use as a clinical illustration a patient who came under his personal observation.

Jan. 15, 1896, there appeared before Prof. H. M. Lyman's medical clinic a case of malaria. Judging the case of more than ordinary interest the writer made special investigations, obtained a full history, made as many blood preparations as possible and through the courtesy of Prof. James B. Herrick obtained a thorough physical examination.

Peter A., age 34 years; born in Germany. Came to America fifteen years ago. Lived in Pittsburg five years. Since then has lived continually in Chicago with the exception of short visits to Jamaica, W. I., and Memphis. Single; locomotive fireman by occupation.

Family history—Father and mother dead. Cause unknown. Brother and sister died from a lingering disease. Personal history—regular in habits of eating and sleeping. Drinks whisky, tea and coffee moderately. Previous illness—when twelve years of age had typhoid fever. Twelve years ago had severe cold and spit some blood with great quantity of slimy mucus. Seven years ago while in Memphis had malaria, which easily succumbed to quinin. Two years ago had gonorrhea with swollen testicle. Fourteen months ago had hard chancre followed by adenopathy. No eruption or falling out of hair. Had rheumatism to slight extent.

Present illness: July 4, 1895, while working on a railroad tunnel in Jamaica, was stricken down with severe chill, which lasted one and one-half hours. This chill was followed by a burning fever, profuse perspiration and great prostration. Patient was confined to the bed for one week and had a chill every fourth day during July and August. During September and October about once a week chill would occur every other day. These chills increased in frequency until when he presented himself before the clinic he was suffering from quotidian paroxysms. During the paroxysms patient complains of frontal headaches, dizziness, ringing in the ears, spots before his eyes and pain in the back and limbs. He is weak and complains of dyspnea on exertion. Has taken some quinin, which has had no effect upon the disease.

Physical examination: Jan. 17, 1895, 4 P.M. 1. Height 6 feet. 2 Weight 165 pounds. 3. Body well nourished, very muscular, large boned and well developed. 4. Mind clear. 5. Skin—face, arms, neck and back tanned; says back is tanned from bathing. 6. Eyes, pupil moderately dilated. react to light; movements and retina normal; sclera slightly yellow (examination of the eye was made by Dr. Hinde). 7. Tongue moist and slightly coated, mucous membrane red. 8. Ears normal. 9. Thorax—heart, relative dullness begins at third rib, apex beat one inch inside nipple line in fifth intercostal space. Pulse, regular, strong, full; 60 beats per minute. Very slight systolic murmur over mitral area and pulmonic area. No accentuation of aortic or pulmonic tones. 10. Abdomen—liver slightly enlarged. Relative dullness begins in right border sternum at fifth rib. Flatness begins in mammary line in fifth interspace. In full inspiration these limits are lowered one and one-half inches. In mammary line there is flatness to costal arch. On deep inspiration sharp edge of liver can be felt. In paracostal line flatness extends two fingers below costal arch. 11. Spleen—readily palpable. Dullness begins at seventh interspase. 12. Legs—on right shin is large pigmented scar said to have been produced by a red hot iron. Three pale parchment-like scars higher up upon same leg. On outer aspect of same leg is a linear non-pigmented scar caused by a scythe. 13. Genitals—a nodule the size of a hazelnut is found in left epididymis. 14. Reflexes—normal, no ankle clonos. 15. Sensation normal. 16. Temperature 98.8° F.

Upon microscopic examination of the blood of this patient a very interesting phenomenon was disclosed. Although in small numbers, quartan parasites were present, associated with many tertian forms. This condition illustrates and corroborates the experiments made by Di Mattei, who substituted one type of malaria for another. There is probably little doubt, as this patient was an intelligent man whose word may be relied upon, but that this fever was primarily quartan and that subsequent to the first a second infection was incurred with a group of tertian organisms. The latter parasites upon development, caused the gradual extinction of the quartan forms producing paroxysms peculiar to their type. In the case cited by Di Mattei the extinction of the original type was accomplished in a much shorter time than in this instance. (Plate xv.)

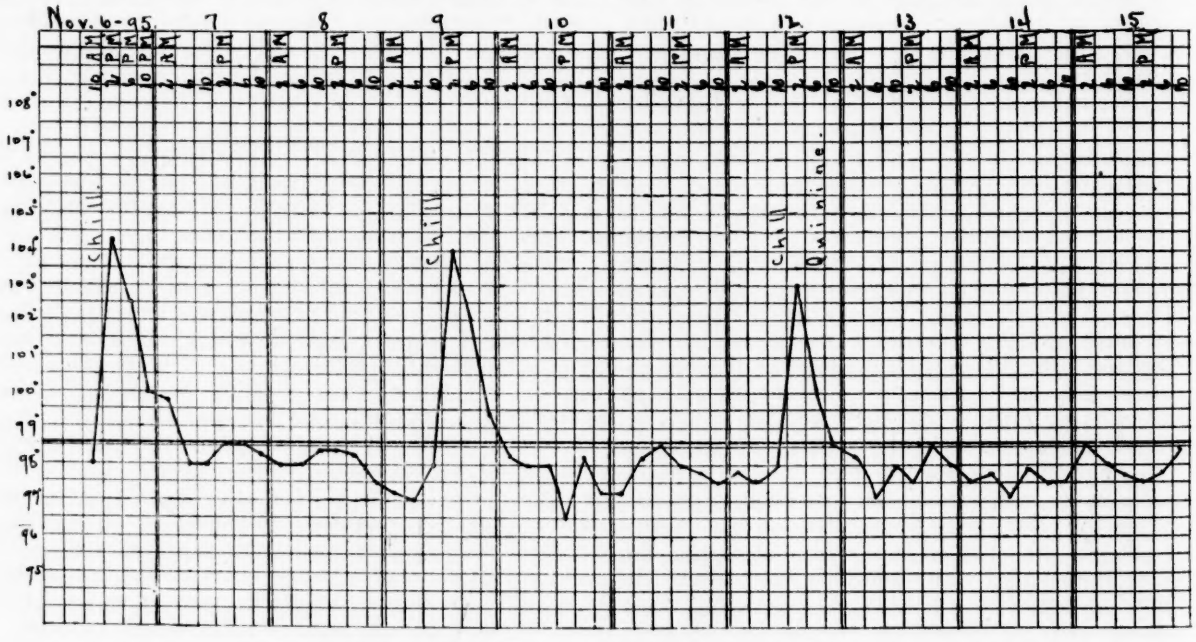


Plate XV.—INTERMITTENT QUARTAN FEVER. TEMPERATURE CHART.

These two types of the parasite, in some cases lying side by side, furnished excellent opportunity for studying their points of difference.

As the tertian organism has been previously described, a description of the quartan will be given by comparing and contrasting the latter with the former.

In the hyalin forms these types can not be differ-

entiated, though the quartan is more refractive and more sluggish in its movements. These appear during and after the paroxysm, as in the tertian. (Plate x, Figs. 1 and 2.)

As the organism grows and pigment develops, the organism as a whole, is much slower than that of the tertian parasite as shown by the length of time required in changing its shape. (Plate x, Figs. 6 and 7.)

As the parasite continues to grow the conditions of

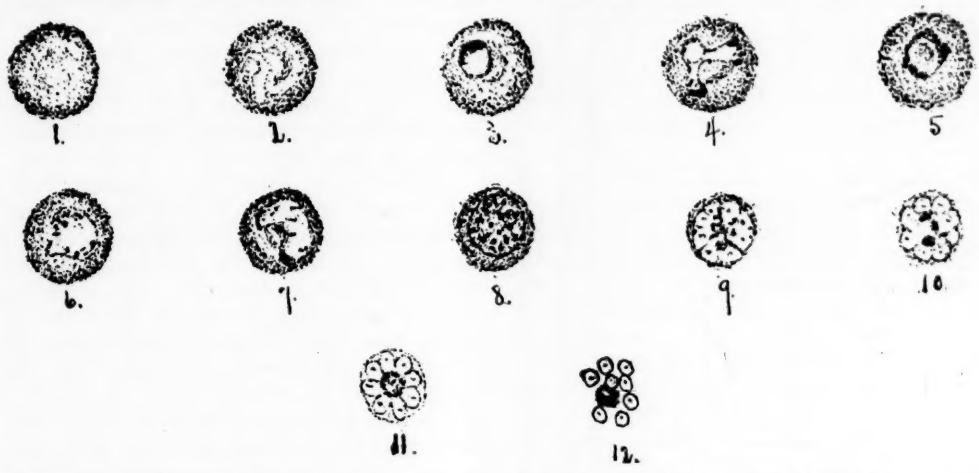


Plate X. THE PARASITE OF QUARTAN FEVER.—1, 2, Hyalin Bodies; 3, 4, 5, 6, 7, Pigmented Bodies; 8, Full grown Organism; 9, 10, 11, Segmenting Forms; 12, Spores. MagnificationZ—eiss Obj. 1-12 oil, Oc. 5.

Plate XII. THE PARASITE OF AESTIVO-AUTUMNAL FEVER; LATER CYCLE.—1, 5, Free Crescents; 2, Ovoid Body in Corpuscle; 3, 8, Free Ovoid Bodies; 4, 6, 7, Crescents in Red Corpuscles; 9, Spherical Body in Red Corpuscle; 10, Free Spherical Body.

Plate XII. DEGENERATE FORMS (?)—1, Flagellate Body, Tertian; 2, Segmenting Body, Tertian; 3, Vacuolization, Tertian; 4, Flagellate Body, Quartan; 5, Segmenting Body, Quartan; 6, Vacuolization, Quartan; 7, Flagellate Body, Aestivo-Autumnal; 8, Segmenting Body, Aestivo-Autumnal; 9, Vacuolization in Crescent; 10, Phagocyte. Magnification—Zeiss. Obj. 1-12 oil, Oc. 5.

marked differences are seen. In the quartan the pigment granules are exceedingly large and few in number. They are of a brown, almost black, color and possessed of a slow motion. In fact, the movement of the enclosing corpuscle differs greatly from that seen in the case of the tertian organism. Instead of becoming swollen the corpuscle either remains of a normal size or slightly shrinks and instead of becoming

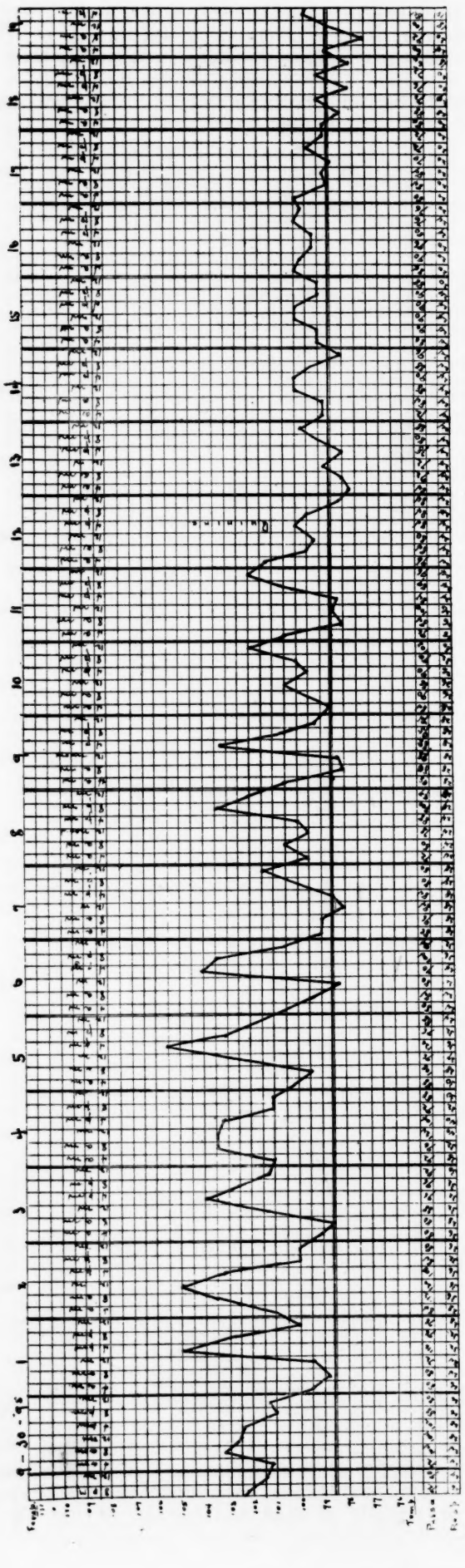


Plate XVII. REMITTENT ESTIVO-AUTUMNAL FEVER. TEMPERATURE CHART.—Chas. F., Cook County Hospital, Ward 4. See also Plate XII.

decolorized takes on, in some instances, a deeper color or a greenish yellow or brassy hue. The difference in degree of refractive power, is more noticeable as the organism increases in size.

The quartan parasite reaches its full development in about sixty-four hours or eight hours before segmentation. It is then round, slightly smaller than the corpuscle, and contains a few granules of pigment, arranged in the periphery of the organism. There is but a thin layer of the body of the corpuscle apparent, which may be overlooked on a casual examination. (Plate x, Fig. 8.)

A short time after the organism has attained the adult form, the pigment becomes motionless and signs of segmentation appear. The manner of segmentation may be similar to that described in the case of the tertian organism. In the segmentation of the quartan organism the rosette forms of Golgi are more often observed. The pigment granules form in a block-like mass in the center of the organism while radiating fibrils of differentiated protoplasm run from the center to the periphery, dividing the parasite into from eight to twelve segments. The segments acquire nuclei and constitute the spores. (Plate x, Figs. 8–12.)

In the case in question many extra-corpuscular forms were present. These were probably degenerate bodies. They were granular, at times crystallin, exceedingly irregular in shape, and contained blocks of pigment, and were often filled with vacuoles.

The flagellate forms found in quartan fever show similar characteristics as those in the tertian and estivo-autumnal types with the exception of greater sluggishness of movement. (Plate xii. Degenerate forms.)

Fragmentation was observed in this case. A pseudopodium was observed to be thrust out from the parasite, filled with slowly rotating pigment. Gradually this portion of the organism was cut away when it assumed a spherical form, the pigment continuing its motion and seeking the periphery. (Plate xii.)

In quartan ague the length of the life cycle is seventy-two hours, and the paroxysms generally appear every fourth day. This rule is not without exceptions as the paroxysms may be caused by different groups of parasites having the same abode, but segmenting at different times. When two groups segment on successive days there is produced paroxysms for two successive days with one day of apyrexia. This is termed double quartan fever. When three groups segment on successive days, a quotidian invasion results which is called "triple" quartan fever. This may be easily mistaken for the ordinary quotidian type when viewed purely from a clinical standpoint.

In his study of the organism of estivo-autumnal fever the writer has been fortunate in procuring specimens from a patient suffering from this disease in Cook County Hospital. The following history was obtained from the records of the hospital:

Charlie F., aged 15 years, born in Chicago, where he has lived all his life. School boy, admitted Sept. 30, 1895. Family history negative. Personal history—does not drink, smokes many cigarettes. Previous history—malaria, no venereal disease. Present history—has been sick three days. Had a chill, headache and diarrhea with anorexia and pain in abdomen.

Physical examination—1. Body—well developed. 2. Skin—face flushed. 3. Eyes and ears—normal. 4. Tongue—dry and coated. 5. Thorax—lungs, resonance imperfect over right lung posteriorly; no râles. Heart—rapid, second beat accentuated, no murmurs. 5. Abdomen—walls rigid, very slight tympany; pain in left iliac region and both hypochondriacal zones; is

covered with brawny, macular eruption; no rose spots. Spleen—not palpable. Liver—normal. 6. Limbs—negative. 7. Reflexes—normal. 8. Glands—axillary enlarged. 9. Genitalia—negative. 10. Urine—negative.

Estivo-autumnal ague is exceedingly rare in this portion of the United States, there having been but a few cases in Cook County Hospital in many years. (Plate xvii.)

In this case under observation but few of the hyalin forms could be demonstrated. These forms (Plate xi, Figs. 1–5), however, are more refractive and smaller than those found in the tertiary and quartan forms. They possess ameboid movements, and assume at times a peculiar characteristic ring-like shape. This appearance is probably caused by the thinning out of the central portion of the organism, the corpuscle showing through. Then again, the parasites appear to have contracted into spheres. The shading disappears from the center, appearing at the periphery. In other respects they closely resemble the tertian and quartan types, except that they are not as active as the tertian, but more so than the quartan.

As the organisms increase in size (Plate xi, Figs. 6–9) minute granules of pigment appear in the periphery. These granules are few in number and sluggish in movement. In some instances pigment does not appear during the course of the development of the organism. This type is characterized by its small size, even in the adult stage. In this stage it rarely is more than one-half the size of the containing red corpuscle, which remains normal in size and often changes to the brassy hue observed in quartan fever. The corpuscle eventually becomes crenated and ruptures, setting free the organism. Segmentation may consist in an irregular breaking up of the organism into from ten to twenty segments, similar to that described as taking place in the tertian organism, or the pigment may collect in the center, the process occurring after the formation of the marguerite forms of Golgi. Segmentation takes place most freely in the internal organs, but it may be observed in the circulating blood. (Plate xi, Figs. 10–12.)

The writer was also able to observe in this specimen larger spherical forms with pigment granules collected in a block-like mass in the center. The bodies of these organisms stained faintly with methylene blue. Thayer and Hewetson state that they have often found these organisms from two to four hours before paroxsyms, and have denominated them "pre-segmenting forms."

Later in the course of the disease larger, spherical, ovoid and crescentic bodies appear in the red corpuscles and free in the blood. These forms were especially abundant in this specimen. They were as large or even larger than red corpuscles, the spherical forms completely filling the corpuscle, while the ovoid and crescentic expanded one side of the corpuscle, the remnant projecting as a small segment of a circle from the concavity of the organisms (Plate xii, Figs. 1–10 A). In many cases ovoid and crescentic forms are identical. This may be proven by rolling the corpuscles upon the slide, when the ovoid bodies may be seen to assume a crescentic form. In the colored specimens the corpuscle stained faintly with eosin, the body of the parasite faintly with methylene blue, while the periphery showed a deeper color, thus giving evidence of a double contour. In many instances the periphery of the corpuscle was entirely decolorized, while that portion next the organism still retained some coloring matter. The pigment was generally collected in the form of a wreath in the center of the organism, encircling a light clear space and surrounded by a yellow or golden halo. The granules were very coarse and at times rod-like. These forms have decided ameboid movements. They have been seen to send out pseudopodia which are often cut off and separated from the organism. (Plate xii.)

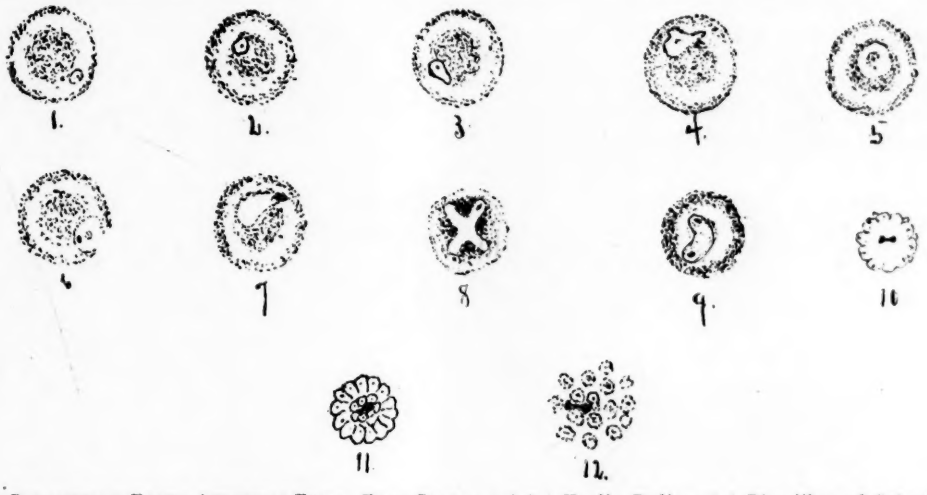


Plate XI. The Parasite of Estivo-Autumnal Fever, First Cycle.—1, 2, 3, 4, Hyalin Bodies; 5, 6, Ring-like and Spherical Bodies; 7, 8, 9, Adult Pigmented Bodies; 10, 11, Segmenting Bodies; 12, Spores and Free Pigment. Magnification—Zeiss Obj. 1-12 oil, Oc. 3.

Owing to the fact that the ordinary forms of malaria are not fatal, postmortem changes in these cases are rarely reported. In fact, the pathologic findings in the mild forms consist in the described blood changes, and an enlargement of the spleen which, in most cases, is plainly palpable. In the pernicious and continuous forms, there is higher mortality, and consequently a greater knowledge as to pathology. Constant changes are present in many internal organs.

On gross examination the spleen is generally increased in weight and size. It may in pernicious cases be reduced in size and weight. This latter condition is explained by the presence of interstitial changes. The capsule is either thick and opaque, or thin and presenting evidence of hemorrhage. The organ is soft in consistency and of a dark brown or reddish black color. It is with difficulty that the Malpighian bodies can be distinguished. (Plates i and ii.)

On microscopic examination, the blood vessels of the spleen appear to be distended, with at times evidence of rupture into the pulp. Thrombi are present, composed of fibrin, red corpuscles, parasites, phagocytes and leucocytes of all types, ranging from the lymphocyte to the giant cell with its budding nuclei. The endothelial cells of the vessels are phagocytic in function, containing all foreign matter found in the macrophages. These macrophages are most abundant in the deeply pigmented pulp and contain degenerated red corpuscles, free pigment, parasites, fragments of hemosiderin, leucocytes and other phagocytes. Thus the peculiar appearance of cell within cell may be observed, and the enclosed cell may, in fact, contain a third.

Macrophages may contain as many as fifty red corpuscles. The pulp cells present a hyalin appearance. They are also phagocytic in function, containing leucocytes, parasites and pigment. In these the pigment granules often assume a very peculiar arrangement. They form dotted lines which, interweaving back and forth in the cell, completely hide the nucleus and at

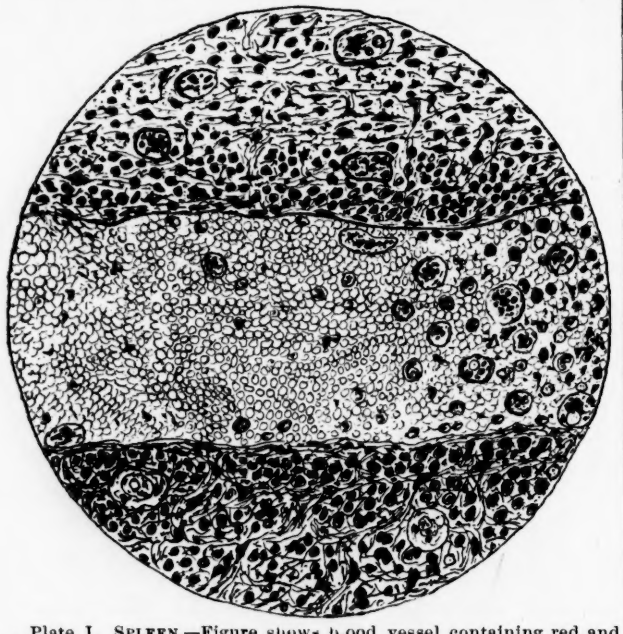


Plate I. SPLEEN.—Figure shows blood vessel containing red and white corpuscles, macrophages, pigment granules and leucocytes. Perivascular tissue shows increase of connective tissue and infiltration with round cells and pigment granules. Zeiss Obj. DD, Oc. 3. Tube lengtn 160 mm.

times even pierce the cell wall. In these mitosis and nuclear pigmentation is often observed. The Malpighian bodies are swollen, and show evidence of lymphoid proliferation. They are, as a rule, comparatively free from pigmentation, but when this does occur the pigment is found in the large cells, surrounding the arterioles. The cells of the pulp cord are often the seat of necrosis, showing evidence of thrombosis. In these necrotic areas, degenerate, vacuolate and fragmenting cells are present.

On gross examination, the liver may be found to be either larger or smaller than normal. It is generally of a slate-gray color and normal as to consistency and weight. The surface is smooth, and the capsule thickened and opaque or thin and translucent, showing beautifully the lymphatic network. On section the color is a bronze or brown. The outlines of the lobules are, as a rule, indistinct, with deep pigmentation about the portal vessels. The small capillaries and bile ducts are often distended.

On microscopic examination under low powers often no pathologic changes are apparent. However, marked dilatation of the inter- and intra-lobular veins and capillaries leading thereto is present. Pigment is generally present. It is commonly found in the periphery of the lobules. It may surround the hepatic vein and swollen capillaries, or be evenly distributed throughout the entire lobule. (Plate vii.)

On examination with higher powers the pigmentation is observed to be most abundant in the hepatic cells and vessels. These cells generally appear granular and swollen. In some areas they are atrophied. When this condition exists it may be accounted for by the presence of dilated capillaries causing pressure. The liver capillaries are engorged and are filled with leucocytes, parasites and pigment granules. The leucocytes contain organisms in all stages. Macrophages are very numerous, varying in size from the large mononuclear leucocytes to cells five times as large. They possess either one or more oval, vesicular nuclei, which stain feebly with nuclear stains. The nucleus is placed eccentrically, as a rule, and although usu-

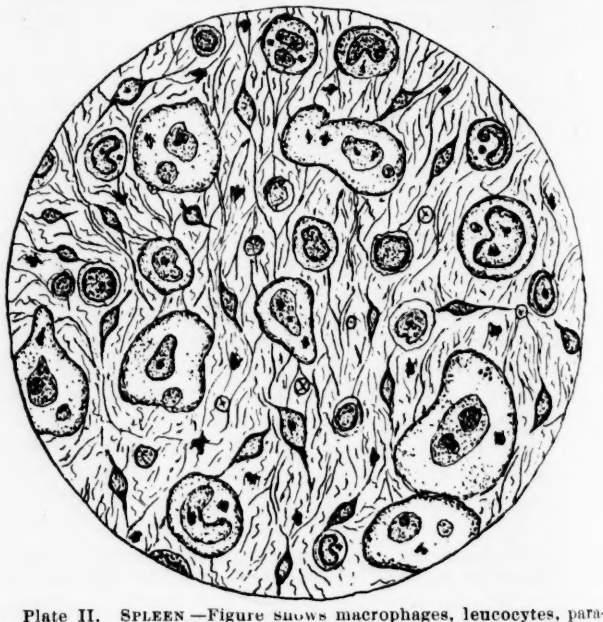


Plate II. SPLEEN.—Figure shows macrophages, leucocytes, parasites, pigment granules and increase of connective tissue. Zeiss Obj. 1-12 oil, Oc. 3. Tube length 160 mm.

ally oval in form, may assume any shape. This is especially true when foreign matter is present in the cell. In some instances the nucleus is entirely absent. The macrophages may contain all of the substances found in the blood stream, and appear more active and capacious than those found in the spleen. The red corpuscles may be normal or degenerate in appearance, and contain simple pigment or the parasite intact. The degenerate forms present the peculiar "globulare rossi attonati" coloration of Golgi, but do not, as a rule, give the reaction for iron. When degeneration has not gone too far, the blue color may be produced with ferrocyanid. Leucocytes found in the macrophages present a degenerate appearance. They are glassy and swollen and show signs of fragmentation and vacuolation, and take but faintly the nuclear stains. (Plate viii.)

The endothelial cells lining the capillaries here, as in the spleen, show marked phagocytic powers. Under the microscope they appear greatly swollen; in fact, at times entirely occluding the lumen of the vessel.

The cells of Kupfer, placed between the capillaries and the hepatic cells, manifest great phagocytic powers, containing great quantities of pigment and presenting a glassy, swollen appearance.

The spaces surrounding the capillaries show marked round cell infiltration.

The parasite, wherever found in the liver after death, appears somewhat shrunken. The arrangement of the pigment is beautifully shown in specimens hardened in alcohol and stained in hematoxylin and eosin.

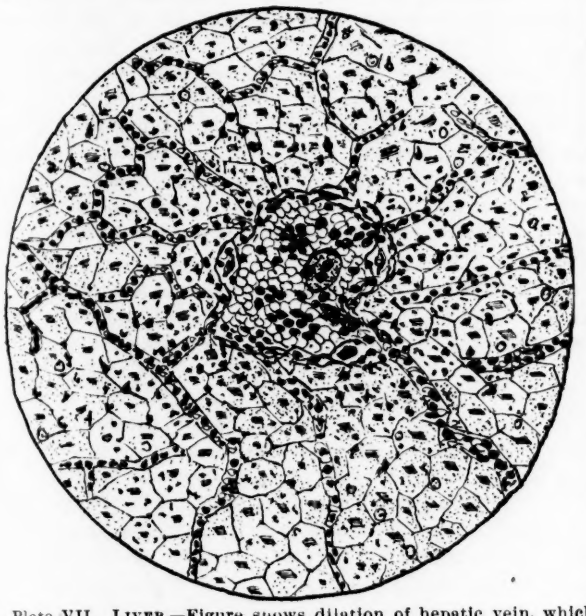


Plate VII. LIVER.—Figure shows dilation of hepatic vein, which contains red and white corpuscles and macrophages. Parasites are seen in and between hepatic cells and in capillaries, where are also many pigment granules. Capillaries are distended and contain many leucocytes. Zeiss Obj. DD, Oc. 3. Tube length 160 mm.

Necrotic areas are common, and are associated with increase of interstitial tissue and proliferation of bile ducts. These changes may be the result of the necrosis, the presence of segmenting parasites or degenerating corpuscles, all of which produce toxic or irritating products.

(To be continued.)

PRACTICAL NOTES.

Sterilization of Syringes.—Hofmeister has found that leather, like catgut, can be effectively sterilized without the slightest injury, by soaking it in a 2 to 4 per cent. solution of formalin and then boiling it. Syringes that screw together instead of being glued or cemented, are better adapted to this method. The water in which they are placed to boil must not be hot enough to crack the glass.—*Cbl. f. Chir.*, July 4.

Experience with Salicylic Medication through the Skin.—Combemale reports nine cases of subacute articular rheumatism, temperature 38 to 38.5 degrees C., successfully treated with salicylic medication through the skin, as described in the JOURNAL, April 25, page 847. The pains were relieved at once; the fever subsided after the first day, and no cardiac complications appeared.—*Bulletin Médical*, July 1.

Nephrectomy with Clamp Forceps Instead of Ligatures.—Bobroff of Moscow recommends compressing the hilum with clamp forceps, instead of ligating it, in extra-peritoneal nephrectomy, which materially shortens the operation. They must be curved and grooved and left twenty-four hours, no longer. The *Cbl. f. Chir.* of June 27, describes the cases and the numerous experiments on animals from which Bobroff and Fedoroff formulated these conclusions.

Intravenous Injections of Water and Strong Salt Solutions.—Bosc and Vedel announce that distilled water is fatal in intravenous injections, either in large doses or small, while ordinary water has no such effect unless over 120 c.c. per kilogram (dog) and 80 c.c. (rabbit) is administered. Instead of diminishing the number of mictions, like distilled water, it increases them and without hematuria. It also raises the temperature from a tenth to one degree above normal. Experiments with 7 per cent. solutions of salt introduced into the vein produced, in large doses, an intoxication like that from strychnin or chloral, with hemorrhages from all the parenchymas and intestines, especially from the meninges.—*Semaine Médicale*, June 24.

Cause of Suppuration with Catgut.—A new theory is advanced to explain the suppuration that sometimes follows the use of apparently sterilized catgut; that it is a chemic instead of a bacteriologic process. The chemic substance that causes it is probably due to decomposition, and therefore only fresh catgut should be prepared in the factory and demanded by purchasers, and further search for efficient antiseptics for this purpose abandoned, as well-made ordinary sublimate catgut has been proved beyond question to be absolutely sterile—*Cbl. f. Chir.* June 27.

Skiagraphy of the Emperor.—It is reported that the left arm of the German Emperor has been "skiagraphed" by the Roentgen rays. The experiment revealed the nature of the malformation, and the result has been submitted to eminent surgeons who believe, it is stated, that a simple operation may give partial, if not complete, use of the hand and arm.

Physiologic Albuminuria.—Serum albumin may appear in urine without any apparent structural change of the renal tissue. It occurs in healthy persons when there is an excess of blood plasma and after too free use of albuminous food. It is produced by conditions altering the blood pressure in the renal vessels; as after taking a cold bath or drinking copiously of cold water. The withdrawal of salt from the food will produce albuminuria, which will disappear when the salt is again given. Proteid metabolism depends on the amount of proteids ingested, for the greater portion becomes changed into circulating albumin. When large quantities of proteid matter have been ingested, what is not appropriated to the sustenance of the system becomes waste material and is thrown off through the excretory channels. It would seem then that albuminuria does not represent a pathologic condition except when it is associated with other and more reliable symptoms.—Dr. L. P. Walbridge in *Med. Mirror*, June.

Effects of Complete Hysterectomy on the Vagina.—Dr. S. C. Gordon says: One of the objections urged to complete hysterectomy is that it has a tendency to shorten and deform the vagina and that it also destroys the arch by removing the cervix which acts as a keystone. By the technique which he employs in hysterectomy, the broad ligaments are constantly drawn up (as soon as cut) by the over and over continuous suture. When the operation is completed by this method, the vagina is elevated above the normal position and closed by the same suture continued from the broad ligament. By this simple operation the vagina is actually lengthened by so much as it is drawn up by the suture. That this condition really obtains he has demonstrated by examinations immediately after the operation. During the past two years he has examined all cases possible that he had previously operated on and found no case of shortening or other deformity; but in two or three cases where the cervix was not removed he found a marked atrophy of the vagina. So far as he has been able to learn from others, their observations agree with his. He believes that the objection is one of theory rather than of actual demonstration.—*Jour. Med. and Science*, July.

Lannelongue's New Treatment of Inguinal Hernia.—Lannelongue presented four boys at the Académie de Médecine recently whom he has been treating with injections of a few drops of a one-tenth solution of chlorid of zinc for eighteen days. The scrotum and inguinal canal are swollen and hard, forming a natural truss to retain the hernia. Even when the boys cough there is no shock in the region. The probabilities are that the vas deferens will remain intact, which time alone will show. The ultimate results of this treatment are awaited with interest.

Formal in Urinary Therapeutics.—The *British Medical Journal* on the above subject quotes Lamarque (Assoc. Franc. pour l'Avancement des Sciences) who states that he has used formal in 1 per cent. solution for washing out the bladder and urethra, and in 5 per cent. solution for instillation in these localities. In acute gonorrhea and in gonorrheal cystitis the results have not been very encouraging; in the chronic gonorrhea they have been better. It is particularly in cases of tuberculous cystitis that the treatment has been successful. The only disadvantage is the pain caused by the drug; this, however, though intense at first, quickly ceases. Daily washings with formal solutions have been effectual in stopping hematuria, relieving pain, and lessening frequency of micturition in cases where every other treatment had failed.

Operation for Eversion of the Lower Eyelid.—Dr. W. N. Thompson describes an operation for eversion, caused by a cicatrix resulting from removal of a tumor from the lid. "I made an incision a little longer than the eversion to be corrected and parallel to the eye just above the cicatrix, and dissected up the integument on either side of the incision, making a dissection much farther under the edges near its ends than at the center, so as to get full benefit of the sliding and elastic properties of the integument near the extremities of the incision. The ends of the incision were then brought together, and its edges held in this new position by sutures, thus changing the original transverse incision to a vertical one, and the distance between the cicatrix and margin of the lid being increased to the length of that of the incision, eversion was corrected and the lid in its proper position."—*Ind. Med. Jour.*, July.

Urobilin and Indican in the Urine.—Urobilin exists in normal urine in small amounts; in acute fevers it is increased four or five times. Typhoid and septic fevers, where there is rapid destruction of blood corpuscles, increase the amount. It is also increased in cerebral hemorrhages, hemorrhagic infarction, retro-uterine hematocele and extra-uterine pregnancy. It is diminished in convalescence from acute diseases, hysteria and nervous diseases. Indican is found in excess in exclusive meat diet, Addison's disease, cholera, carcinoma of the liver, chronic phthisis, central nervous diseases, typhoid fever, dysentery and obstruction of the small intestines.—Dr. M. D. Hoge, Jr., in *Va. Med. Semi-Monthly*, July.

Increasing Uses of Massage.—Our Russian exchanges are advocating the application of massage to the most varied troubles, from chronic heart disease to the ambulatory treatment of diseases of the female genital organs, with which Rubinstein has relieved or cured ninety cases of metritis, oöphoritis and abnormal positions of the uterus. (*Eshenedelnik*, Nos. 44-46.) Dr. Hoadley of Chicago recommends the use of the cannon ball for self-massage in cases of habitual constipation, as suggested by Sahli in 1887. Before rising in the morning and at night, the iron bail (covered with several layers of woolen cloth, the first glued to the ball) is slowly rolled around on the abdomen, following the course of the colon. In many cases this treatment has effected a permanent cure. Any foundry will cast an iron ball for a few cents if a croquet ball or something of the kind is supplied for a pattern, although an improvement upon this is described in the *Deutsch. Med. Wochenschrift* for June 25, the addition of a wooden handle to the ball, which revolves freely in the stirrup fitted to the handle. According to the inventor, Oetker of Oeynhausen, this renders it much easier to manipulate.

Codein and Swabbing the Larynx as Adjuvants to O'Dwyer's Tube in Membranous Croup.—Variot has found the tube effective in conquering the glottic spasm in certain kinds of diphtheritic laryngitis, removing the tube in three or four minutes, and assisting the nervous system to control the tendency to spasm by administering syrup of codein. Bayeux has also found swabbing or scraping the larynx with the tube an effective method of treating very membranous diphtheria. As the tube is introduced the membranes dislodged fill it, and the child chokes, when the tube should be withdrawn. The efforts to cough will then expel the loosened membrane. Some children have recovered after one operation; others have required another to complete the expulsion of the membrane or to conquer the glottic spasm. Out of the twenty-three children treated, nine recovered, three required tracheotomy, and in nine the tube had to be left permanently. There were eight deaths, a mortality of 34.78 per cent. in the twenty-three cases. —*Semaine Méd.*, July 8.

Treatment of Cholera Infantum with Subcutaneous Injections of Serum.—According to Reinach, the treatment of cholera infantum should aim to keep the blood from growing thick and rest the intestines, while supplying strength to the organism. He claims that all these conditions are combined in injections of serum from a horse, as he administered it to fifteen infants, in a dose of ten to twenty cubic centimeters. The effect was remarkable: The collapse passed away, the cyanosis was replaced by the natural color of the skin, the extremities grew warm again, the pulse became stronger, and the temperature rose. This improvement took place in six to seven hours and the child was cured; although in some cases a second dose was necessary. No other medication was given except rice water. The serum produces a fluidity of the blood, while it is at the same time food for the child, as Reinach states that twenty cubic centimeters of the serum contain one gram and a half of assimilable albuminoid substances, equivalent to fifty grams of cow's milk, or 150 grams of mother's milk.—*Rev. Int. de M. et de C.*, June 25 from *Münch. Med. Woch.*

Rheumatic Iritis.—"Rheumatic iritis," says Dr. Crittenden Joyes, "is more serous than plastic, hence we are not so apt to have adhesions as in other forms. The objective symptoms are, pink circum-corneal injection, hazy, aqueous and change in color of iris. The subjective symptoms are impairment of vision, photophobia and pain in the orbital and malar regions, forehead and top of head. The pupil is frequently dilated, but is sluggish in action. The pain is sometimes greater than in other forms of iritis. The prognosis as to vision is better than in other forms; but the duration is apt to be long. Treatment consists of hot water and atropin, together with salol, salicylates, iodid of potash or some other remedy for the rheumatic diathesis."—*American Practitioner and News*, July.

Instrument for Removing Anastomotic Buttons Through the Mouth.—Hagopoff has invented a flexible sound terminating in a bulb, through which is passed a double silver thread ending in a loop at the end of the bulb. It is for the purpose of drawing out through the mouth a thread fastened to the button in gastro-enterostomy. Later when the button is liberated, the sound is reintroduced through the mouth and guided by the thread can be pushed down to the button, and then withdrawn with the thread and the button, as the bulb opens a pathway for the latter. Chaput queries whether the introduction of the sound during the operation will not produce vomiting which might force alimentary matters into the peritoneum. Hagopoff has also invented an anastomotic button similar to Chaput's button, but as yet it has only been tested on cadavers.—*Semaine Médicale*, July 8.

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It would greatly facilitate the prompt delivery of the JOURNAL to those members of the ASSOCIATION living in large cities, if they would kindly furnish this office with their street address in those cases where it is omitted from the wrapper of their JOURNAL, as we have been notified by the postmasters of the larger cities that second-class mail matter not having street address, would be placed in the general delivery to await call.

SATURDAY, AUGUST 1, 1896.

CLIMATE AND HEALTH.

Since the earliest ages it has been a favorite theory that diseases come upon mankind through the medium of the atmosphere; and even at the present day there are to be found some, who assume with SYDENHAM an epidemic constitution of the atmosphere to account for the occurrence of certain wide spread diseases. An enormous amount of work has been done by doctors and others in observing and recording the weather, but very little has been accomplished in the way of collating these observations. It is so easy to observe and place on record, but it requires much time and labor and qualities of a different and higher order to compare and generalize. SAMUEL FORRY of the United States Army collated in 1840 the meteorologic observations made during the preceding twenty years by the medical officers at the various military posts of this country, but since then not much has been added to our knowledge of medical climatology. Accuracy has indeed been given to climatologic data, but their application to concurrent conditions of morbidity has been made only in special instances. Of late years the bacteriologist has stepped in and relieved the medical climatologist of many of his subjects of study. Many of the causative agencies of epidemic diseases have been trailed to their haunts, and although some, such as typhus, yellow and scarlet fevers, smallpox and measles, continue in their old time obscurity the indications are that atmospheric or climatic conditions exercise only an indirect influence, powerful in some instances as in the disappearance of yellow fever on the advent of frost, but at the same time only indirect.

Although the tendency of modern research has thus been to restrict the field of climatologic study the factors of climate continue to have an importance as factors of disease. The influence of heat, cold, moisture and air movement in determining the occurrence of disease is so great that the diseases thus occasioned are known as climatic diseases. A knowledge of these is of the highest importance; and much good was anticipated when the Weather Bureau of the Agricultural Department announced that it had made arrangements for tabulating along with its meteorologic observations the morbidity and mortality statistics obtained from health officers and registrars. *Climate and Health*, the monthly journal issued by the Department was intended to be a repertory of statistic and other information appertaining to climate and its relations to hygiene, from which persons interested in the subject of the influence of the climate and weather upon health might obtain data for making comparisons to determine the relative therapeutic and hygienic merits of different climates. Thus said its prospectus; and from the very energy of the Bureau, which led it to step outside of questions of mere wind and weather, we hoped that a sections of the work, which in a country like the United States of America should be done by a special Department, would be begun by the Weather Bereau and continued by it until Congress should breathe the breath of life into a Department of Public Health with ample powers to carry on its proper functions. *Climate and Health* was begun and carried out successfully. The work met with the earnest coöperation of medical men and health officers. But its last issue has been made (No. 3 of Vol. II for the four weeks ended March 28, 1896, issued June 22, 1896). A doubt as to whether its publication was authorized by the act making appropriation for the Department of Agriculture for the fiscal year ending June 30, 1897 was the cause of its discontinuance. Credit must be given to Professors HARRINGTON and MOORE, who originated and carried out the idea and to DR. W. F. R. PHILLIPS, who has so ably edited the successive issues of the publication. They recognized the needs of the situation and their own possible ability to aid in sanitary work. But this country in matters relating to the health of the people should be independent of volunteer aid of this or any kind. It should have all such work done by men specially assigned to the duty under the direction of a Department of Public Health.

Let us have a Department of Public Health!

THE POISONS OF ALCOHOLIC DRINKS.

It is a very commonly accepted opinion that the injurious effects from the use of alcoholic beverages are due to the adulterations. Many temperance advocates make this a strong reason for not using spirits.

Recently a prominent physician condemned with great severity the use of spirits to which various poisons had been added. He enumerated several of these poisons and seemed positive that here was a source of danger overlooked before. Dealers in spirits have found this an excellent theory from which to prove the purity of their products and the risk of buying others from a rival dealer. A number of enthusiastic reformers have made exhausting chemic analyses to discover these dangerous adulterants, but without any results. One man spent two thousand dollars in procuring samples and analyzing them in New York City, but failed to find anything more than water and some cheap coloring matters. The Massachusetts Health Board examined this theory years ago and gave it up, contenting themselves with the examination of bitters and proprietary drugs and the amount of spirits which they contained.

Notwithstanding the failure to find any of the so-called adulterants, the idea has been kept alive and repeated, as if it was a fixed fact. Recently the profession has been treated with circulars, containing certificates of a chemist who writes M.D. after his name, in which he announces that from a most exhaustive search he has been unable to find any poisons in a certain brand of spirits. Then he volunteers that this was unusual and rarely occurs in the most reputable forms of spirits. A few weeks ago this subject came up before the Royal Commission an Licensing Laws in session in London. This government commission composed of eminent statesmen, physicians and business men, have been taking testimony on all phases of the drink question, with reference to license, from which they will report to parliament the changes advisable and necessary in new laws. DR. BANNISTER, the deputy principal of the government laboratory, was called on to give testimony concerning the causes of drunkenness affirmed to be due to the adulterations of spirits. He stated very positively that in the examination of thousands of samples of spirits, the only adulteration was water. That adulteration of spirits by any other substance was practically unknown. Also that age rendered spirits more harmless was a delusion. The supposed maturing of spirits by which the fusel oil was driven off was untrue. He asserted that there was no difference in the physiologic effects of spirits made ten years ago and to-day. Certain alcohols were the same irrespective of age; also it was a mere question of quantity, not of quality. The alcohols of commerce used in beverages, were nearly all the same and had the same physiologic action. One of the commission was a distiller, and a rigid examination followed, concerning beer and various mixed beverages, which brought out the fact that alcohol was the only poisonous substance in any of these mixtures. Other very curious facts were stated relating to beverages said to be free from alcohol and contain nutrient and medicinal properties which in nearly all cases were fortified with spirits concealed in some form. Physicians who discuss the alcoholic problem and believe in danger from adulterations, will have to abandon this delusion or make some original analysis to prove their statements. Manufacturers and dealers who claim prominence and purity, must do so by showing a small per cent. of water.

Evidently there are many truths to learn in this field.

SANITARY AND INSANITARY PLUMBING.

The *Lancet* (London, Eng.) has just published, July 4, 1896, the results of an elaborate piece of work conducted under its auspices, which will do much to disseminate among laymen as well as among the medical profession a knowledge of the system of pipes usually found in English dwellings for the inflow and distribution of water and its outflow contaminated with all the wastes of the household. Its enterprising management instituted a Commission, which investigated the faulty and dangerous conditions that are most commonly found in city houses and suburban cottages. In its report the Commission has grouped these conditions in a description of three houses, two four-story city dwellings and one suburban villa, with a ground plan of each floor, illustrations of many of the defects and a special discussion in each instance not only of the defect but of the remedial measures recommended. Although faults in plumbing were found to be exceedingly common in city houses, it is not to be supposed that all those represented in either of the two houses given in illustration were discovered in any one particular house. The insanitary conditions found in many houses are grouped under one roof merely for convenience of presentation and discussion. Three reasons are given for the existence of so many insanitary houses. First, the prevailing indifference and consequent ignorance of all classes as to the various sanitary appliances by which they are surrounded. This is being slowly corrected by the gradual education of the public through the greater interest taken in the subject by the medical profession; and this very report of the Commission will be a powerful factor to this end, as it is not intended to confine its publication to the columns of the *Lancet*. It reaches the profession in this way, but it will hereafter be published in book form to permit it to reach householders, architects, contractors and plumbers. The

second reason given for the insanitary conditions discovered is the bad work and cheap materials put into houses by unqualified or unscrupulous men encouraged by the dangerous practice of putting such work up for the competition of all who may choose to tender for it. In the anxiety of contractors to obtain work it is undertaken at prices which would yield no profit if efficiently executed; and when a work is entered upon under such conditions the natural tendency is to seek relief by scamping it in some form. It is positively stated that since the general adoption of the contract system houses are not as a rule substantially finished and the work is not of a satisfactory character. The third reason given is the cost of rectifying insanitary work. Under this heading the profit and loss of the plumber is discussed at considerable length showing how a modest profit can not ordinarily be made legitimately on small contracts. Appended to each of the illustrative examples is a detailed estimate for the alterations recommended, that those who are interested in cost may have a standard of comparison.

Prior to the publication of this report it was submitted to the Worshipful Company of Plumbers, who appointed a committee to consider it. In transmitting the criticism of this committee the company desired that it be not held responsible for the work of its specially appointed committee as the company in its corporate capacity does not take any part in what may be regarded as trade matters, but directs its attention solely to those connected with the training and registration of plumbers. This special Committee considered the reasons given by the Commission for the frequency of bad, defective and insanitary work to be generally correct. It gave approval to the recommendations for new and altered work in the illustrative cases as being consistent with the requirements of modern sanitation and fairly representing the sound plumbing practice of the present day. Finally it characterized the report as "a unique work on the subject of the efficiency and cost of plumbing work, calculated if studied attentively to assist members of the medical profession, sanitary authorities and others in arriving at a more correct judgment than commonly prevails as to the chief causes of the defective and insanitary plumber's work frequently met with and to afford them some useful information as to the cost of plumbing work which is sound in construction and sanitary in character."

The report of the *Lancet's* Commission will be studied with as much interest on this side of the Atlantic as on the other, for many of the defects and faulty arrangements described may be found in our city houses; and the recommendations submitted are in accordance with the views held by our best sanitarians. It is to be observed that while the English soil pipe is of lead and runs along the exterior of the wall of the house the American pipe is generally of iron and is retained inside the wall (on account of our severe winters) until it makes its exit as the house drain. It is to be observed also that the English have an elaborate disconnecting chamber on the drain in place of our fresh air inlet on the house side of the trap. Our English contemporary is deserving of credit for this inquiry and report.

CONSANGUINEOUS MARRIAGES.

One of the questions of medical deontology that still remains in dispute is that of the opinion that should be given in regard to marriages between persons closely related by blood. It is true, physicians are not often consulted on this subject, but their expressed or published opinions carry weight, and are therefore of sufficient importance to deserve some consideration. As it is they are to be had on both sides of the question, both orally given, published in medical treatises, as well as exemplified in actual practice. It may be said to be still an open question, as far as medical authority goes, whether a man should marry his first cousin or not. As regards closer relationship, such as those of uncle and niece, or nephew and aunt, though not a legal barrier in some countries, they would, it may be assumed, be very generally or unanimously considered objectionable in the United States, or at least the greater majority of them.

At the present time the laws of many of the States forbid the marrying of first cousins, but as long as this rule is not universal it really amounts to very little. The question may therefore be put before us practically in any section of the country.

As a recent French writer on the subject, M. Paul Perrin, states, there are three views extant at the present time: 1. That consanguineous marriages are not generally harmful, but may, on the other hand, be actually beneficial to the offspring and the race. 2. That they are always dangerous to both, and should be prohibited by law. 3. That they are dangerous in any case with a family taint, but otherwise unobjectionable. As regards the first of these, M. Perrin decides that it is altogether too extreme a view, and should be rejected at once. The experience indeed of mankind is against it, the statistics of idiocy, insanity, deaf-mutism and epilepsy, to say nothing of those of the inheritance of other diseases and defects, speak strongly enough in its condemnation. Even the intermarriage of persons more distantly related seems to have its perils, and a striking example of them can be found in studying the history of the royal families of Europe, which have nearly all been for centuries intermarrying more or less closely, and which show a record of degeneracy far surpassing that of any equal number of families of the average population. With all due consideration for their numerous estimable and able members at the present

time, there is hardly a single royal family into which it would be good medical advice to counsel an honest citizen of good heredity to marry.

The second view is also too extreme in its statements at least, since there is no question but that there have been many unions between near relations without bad results, and it needs no further consideration.

The third view is after all the only one that is of practical importance, as it involves the forming of an opinion in every individual case. We can admit possibilities in either direction, but in advising for future conduct, one has to weigh probabilities rather than to consider chances more or less remote. If human stirpiculture was on the same practical basis as artificial breeding of the domestic animals, it is easy to see how certain qualities might be cultivated by inbreeding, but even were this possible experience with the lower animals has shown that it impairs the vitality and that as in the vegetable kingdom frequent changes of soil and seed are essential to produce the best results. With the artificial modes of life of civilized mankind we have a still greater probability of the production of degeneracy. The lack of knowledge of hereditary taint is no absolute proof of its non-existence in any case and there are few individuals who are aware of all the degenerative possibilities in their own family histories. When the question arises therefore, as to the advisability of intermarriage in a case where the heredity seems to be good on both sides, an absolutely noncommittal position, as advised by M. Perrin, is a prudent one, and, as in most instances advice against marriage would be at least useless, is probably the only practicable one for the family physician. Where any taint exists, whatever legitimate influence can be used against the marriage should be exerted.

On the whole it would probably be well could the restrictions in force in some of the States against intermarriage of near relations be extended over the whole country.

THE NEW NURSE.

The English journal, *The Practitioner*, has within the past few months devoted considerable of its editorial space to a consideration and criticism of certain aspects or phases of the modern trained nurse. It appears from its statements that in England there has developed a very decided inclination amongst nurses to magnify their office unduly and that the present system of training tends then to produce "not so much nurses, in the proper sense of the word, as a lower order of medical practitioners who may be useful or who may be dangerous, but who in any case are superfluous." The editor pleads for a return to common sense in the training of nurses, and asks what use it is for them to have vague notions of anatomy or physiology in the practice of their legitimate work. The old nurse, he says, was not a thing of beauty altogether, and very imperfectly realized the ideal of a ministering angel, but the new nurse is often too good in her own estimation to confine herself to the humble but useful subordination to the physician that the situation actually demands. The latest editorial, while a continuation of the others, seem to be especially called out by the fact that the first volume of the "System of Medicine," edited by DR. CLIFFORD ALBUTT, contains a contribution on nursing, written by a nurse who thus reverses the professional situation by assuming to instruct physicians.

While in this country the condition of affairs, at least so far as anything is in evidence, does not seem to quite correspond with that in Great Britain in badness, there is yet enough to suggest a little reflection on the part of the medical profession. Human nature is fallible and a nurse's training does not eradicate or counteract all the tendencies to undue self-assertion and overstepping proper limits that a little dangerous semi-medical information would be likely to bring out in many if not in all individuals. With the multiplication of training schools (so-called) for nurses in almost every hospital, sending out diploma'd graduates every year, and the growing appreciation of their services amongst the laity, it is easy to see how the less wise among the nurses might come to have a very decided overvaluation of themselves that might lead to all the grievances of which the British editor complains. Add to this the influence of women's clubs and other female organizations, the unequal inability of doctors to impress themselves on the average female nurse and we have still further possibilities of an American experience of the present trouble of our British medical brethren. Perhaps our salvation will be found in the much greater facility of medical education for women in this country and the consequent abundance of regularly educated female physicians who would naturally resent the more quickly the assumption of what *The Practitioner* calls "doubtful demi semi doctors" of their own sex. The conceited and injudicious nurse is much more likely to be quickly snubbed by the physicians of her own sex who would naturally, under the circumstances, be more jealous of their professional dignity and would lack the masculine consideration that a male doctor might feel toward one of the opposite sex. If this notion is correct we have reason, in view of the English developments, to be thankful for the female physician.

It would be well for us, however, in the active competition of hospital training schools, to give a little thought as to the value of any very elementary instruction in such subjects as anatomy and physiology to the trained nurse, and the possible inconveniences of a little dangerous knowledge that are pointed out by

the English editor. The trained nurse is, as he says, a parasite, in the scientific sense of the word, and can have no legitimate existence apart from the medical profession to which she is subordinate. Any insubordination or assumption of special and independent functions is contrary to her purpose and dangerous to her usefulness.

CORRESPONDENCE.

Typhoid Fever Treatment.

POLAND, OHIO, June 15, 1896.

To the Editor:—I am always glad to have an opportunity to say a word for the Woodbridge typhoid fever treatment. . . I am surpised and amazed at its success. The unusually dry summer of last year in this locality caused our wells to go dry, or nearly so, the average wells not having more than from six to eight inches of water in them, the users exhausting the supply nearly every day. This condition of affairs continued for some time and the few slight rains that we had in the early autumn washed the filth and garbage which had been decaying during the hot summer from the surface of the ground into the wells, and as a result the germs of typhoid infected the water and an epidemic of the fever prevailed in our town of about 600 inhabitants. There were in all about twenty cases. All occurred in families that I treated regularly and it fell to my lot to care for them. I had Mr. Wilson McKeown of Youngstown make an examination of the water these patients had been drinking and he pronounced it to be chemically impure. The cases were nearly all in one street and the wells were undoubtedly fed from one stream as they were of about one depth, eighteen feet. The attacks were of unusual severity from the very onset, temperature rising rapidly and soon ranging from 103 to 103½ in the morning and from 104 to 105 at 6 P.M.

In the twenty cases, all except four had a temperature of 104 to 105 for days together. Delirium manifested itself early in the course of the disease in six of the cases and continued during the height of the fever. Rose-spots were apparent from the seventh to the tenth day of the disease in twelve, in eight this symptom was absent. Cephalalgia was present in all the worst cases and continued from three to five days. Hemorrhage from the bowels occurred in six cases; one had seven hemorrhages; some others from one to four.

Owing to the severity of the epidemic, I did not succeed in aborting the disease in all cases. One had an evening temperature of 105 for eighteen consecutive days, and for three days it did not vary from 105; this was the case that had the seven hemorrhages. For two weeks I did not expect this patient would recover; she was a naturally strong girl of 18 years. During the height of the disease and throughout its long continuance she was able to take a liberal amount of nourishment, which aided materially in tiding over the crisis. The long continued high temperature produced such exhaustion and emaciation that it was six months before she had recovered sufficiently to leave the house and after she was well enough to sit up it was two months before she could walk.

I followed faithfully and carefully the Woodbridge treatment from beginning to end in all of the cases; none died and all are well to-day and following their usual vocations, light of heart and buoyant in spirits, no dregs left behind as in the old method of treatment. I think that had I treated these patients by "the old method" I would certainly have lost five because the disease was of such severity from the onset. I have treated many cases of typhoid fever by this same old method in times past and upon making a careful comparison and taking into consideration the gravity of this epidemic I do not think I have made an over-estimate of what the death rate would have been had I not used the Woodbridge treatment.

My experience during the past two years with this treatment teaches me that to be successful, all directions given by Dr. Woodbridge must be carefully followed. When the clouds are dark, do not allow yourself to be tempted to change methods, but continue the antiseptic abortive treatment to the end, and you will be rewarded by seeing your patients recover rapidly.

I have now treated forty-eight cases by this method and have been successful in every instance. Average duration of illness was eighteen days; average duration of treatment thirteen days. Most respectfully yours,

C. R. JUSTICE, M.D.

Typhoid Fever.

WAVERLY, N. Y., July 20, 1896.

To the Editor:—Although much has been written upon the subject of typhoid fever of late, it seems important that the antiseptic treatment should be fully and extensively discussed. If the results obtained by many observers be verified and sustained by extensive experience, then indeed we have made wonderful strides in the management of this formidable disease.

My experience with typhoid fever during the past thirty-five years has convinced me that it is a self-limited condition or disease, and it seems self-evident that many people are immune to its toxic elements or the condition styled auto-infection, and also the so-called "mixed infection," recovery taking place after the gravest symptoms and without treatment. Many persons seem to be immune against typhoid fever, leading some observers to conclude that the disease is not infectious or contagious. Now does it not follow, if this be true, that some help in the way of rendering the system immune will diminish the ratio of mortality? Dr. Quine says no one should condemn measures claimed to produce this result, and I hold similar views. In surgical practice we realize the importance of internal asepsis in preventing auto-infection, well knowing by experience that ptomains may be developed under conditions of shock, which destroy the patient when the traumatism in itself is not serious. Now, typhoid fever is usually accompanied with symptoms of nervous shock or depression; then does it not naturally follow that some principle of intestinal asepsis will prevent the fermentation, putrefaction or septic conditions which result?

Twenty-five years ago I adopted this view and at once discarded nearly all the usual remedies. I might say all, with the exception of calomel in small and oft-repeated doses during the first few days of the fever, and aconite in small doses to produce diaphoresis when indicated. I discontinued the use of quinin, veratrum, digitalis, iron, stimulants, etc., unless indicated by extreme exhaustion. My treatment thereafter was Merk's lactic acid, usually combined with the syr. lactophos. calcis, of the former two drams and of the latter six ounces; dose, a teaspoonful four times in the twenty-four hours; tinct. aconite in small and oft-repeated doses, when the skin was dry; no other remedies were used as a rule. I seldom saw much tympany or the dry brown tongue, seldom any sordes; why? simply because lactic acid is one of the best antiferments in the world; it prevented putrefactive changes, promoted assimilation, and the results were exemplified by recovery in 95 per cent. of all cases treated during twelve years—more than sixty cases. During the past twelve years I have treated seventy-two cases without any fatality, and in justice to Dr. Woodbridge, I should add that I have, during the past year, combined the carbonate of guaiacol, as recommended by him, with the treatment heretofore mentioned, in twenty cases, with most excellent results; in nine of the latter the disease being checked from the fourteenth to the

seventeenth day from the initial chill. In many of these cases the symptoms for a few days were severe, indicating a grave type of the disease, but almost invariably a lower plane of fever, and a marked amelioration of all the symptoms was established, the tongue and skin becoming moist, delirium diminished or abolished, tympany disappearing and patient sleeping and resting better. Occasional sponging seems to assist materially in restoring the nervous equlibrium; it has not, however, been employed with the object of reducing fever.

I have given the carbonate of guaiacol in 1-6 gr. tablets every hour through the day and three or four times during the night if the patient is often awake, for several days, and every two hours during the day thereafter while the fever continues.

I have observed the usual proportion of hemorrhage and relapses; the antiseptic treatment probably does not prevent either, but I do think it establishes the fact that relapse is not due to reinfection, but rather that the typhoid element is held in abeyance in some of the glands or adjacent lymphatics, manifesting itself after the subsidence of the first attack in a similar manner as zymotic diseases are held in abeyance during the latter period of pregnancy.

The etiology of typhoid seems to be a moot question. Perhaps a majority do not consider it contagious, but the most eminent authorities now, I believe, so consider it, and farther claim that the bacilli are carried in the dust of the atmosphere as well as in water; this I believe to be true, and am equally certain that they are given off in the exhalations from the lungs, but perhaps not to the same extent as by the feces. Now, has it ever been demonstrated that the typhoid bacilli pass safelv through the stomach and enter by absorption the glands, which, by a wise provision of nature, are intended only for expulsion or secretion; is it not a more reasonable theory that they enter some of the unprotected organs and are conveyed through the lymphatics to those glands; does not the mysterious fact that they are found in remote organs tend to establish such a theory? No observer has yet accounted for their presence in such remote organs except by that route. It has always seemed a strange phantasy that the stomach, with its powerful secretion, should not be able to destroy any living organism. It certainly does in the lower animals. Is it not a more reasonable theory that the bacilli which prove virile adhere to the mucous surface of the nose, throat or bronchi, and find their way through the sewers or lymphatics to the intestinal glands and other organs?

I do not claim priority in the antiseptic treatment of typhoid fever, and while Dr. Woodbridge may not have originated such treatment, he certainly deserves a monument for his indefatigable efforts to convince the medical profession of its efficacy and importance. R. SAYRE HARNDEN, M. D.

A Reply to Dr. Donald Maclean's "Open Letter to the Members and Friends of the Medical Profession (Regular) in Michigan."

DETROIT, MICH., JULY 27, 1896.

To the Editor:—The Michigan Medical Legislation League is the outcome of a series of *public* meetings called (through the newspapers) by the Wayne County Medical Society (regular) for the purpose of enlisting the coöperation of all registered practitioners of medicine in this State, in an effort to secure from the next legislature a law to establish an adequate standard of qualification for all persons who may desire to practice medicine in Michigan in the future. These meetings were composed of all sorts of medical practitioners, many of whom were "Regulars" *good* and *true*. The sentiments expressed in Dr. Maclean's open letter are good; but his sweeping censure of the organization in question, would seem *mal apropos*, because "The League" is merely a *political body*, with no object or purpose except the one set forth, viz: that of *promoting legislation* for the protection of the people from future unqualified practitioners of medicine. The League is *not strictly speaking* a *medical* organization. There is no question of medical ethics involved in the issue before us, and no creed to be assailed or defended. It is no more an "unholy alliance" than a combination of Catholics, Lutherans and Presbyterians would be, when made for the attainment of some secular object. Now, then, as any *person* in Michigan, in possession of any sort of medical diploma, can become a *legalized practitioner of medicine* upon the payment of seventy-five cents; therefore each and every one who has thus registered at the County Clerk's office is upon the *same legal plane!* Thus "before the law" as it now exists, the educated and the ignoramus; the Christian and the Charlatan; the gentleman and the drunkard are each on an equality; and Legislatures, as well as courts, do and always will recognize such vested rights! Our (the regular profession) efforts at convincing the people, and the politicians, of the wisdom of adopting measures which we *alone* promulgate have repeatedly failed, as the history of medical legislation, not only in this State, but in every other State of the Union attests. It is therefore practically useless to attempt the achievement of any medical legislation unless the majority of all practitioners, of all sorts, acquiesce in the movement. Obviously then, it would seem to be the *patriotic duty* of every regular practitioner in Michigan to throw aside Phariseeism and heartily aid this organization in its efforts to promote legislation for the protection of humanity and the elevation of the quality of medical practitioners in general.

The Doctor is in error when he states that there are but *two* regular practitioners on the Executive Committee of the League. On the contrary, there are *five* regulars, three "homeopaths" and one "eclectic."

E. L. SHURLY, M.D.

Legislation League.

DETROIT, MICH., July 25, 1896.

To the Editor:—I was pained to see, in to-day's JOURNAL, a communication from Dr. Donald Maclean opposing the efforts of the Medical Legislative League.

Some of his points are very good. We all admit them; but what shall we do? Dr. Maclean has been at the head of the Legislative Committee of the regular State Medical Society for twenty years, and has never accomplished anything. The number of incompetent and irregular practitioners has steadily increased. Illinois, Canada, Indiana and Ohio, in fact, all the surrounding States, have passed laws to regulate the practice of medicine, and the result is that Michigan has been the dumping ground from the surrounding territory. Shall we continue, or make some effort to limit this?

In the present state of the public mind we can not pass a law favoring regular practice. We must be liberal and take in all those now practicing medicine. By doing that, we can pass a law which will be a great improvement; it will not be perfect, but if we have a start we can easily improve and amend the law, but it is very difficult to get a new law; hence, we have joined hands with everybody calling themselves doctors to get a law passed preventing any ignorant and incompetent physicians coming into the State hereafter. That will be a great improvement. It will give the young men a chance by preventing the intense competition.

It makes no difference to Dr. Maclean or myself how many or how few quacks there are in the State, but it does make a vast difference to the new beginner; hence, I can not see why any reputable, regular physician should oppose this movement, and I am happy to say that it is the overwhelming sentiment of all regular practitioners, of all so-called "homeopaths" and of all the quacks of this State, that the further influx of charlatans and quacks should be checked.

Respectfully yours, J. H. CARSTENS, M.D.

A New Hemoglobinometer.

CHICAGO, July 23, 1896.

To the Editor:—In a paper read by me before the Chicago Academy of Medicine last January (and published in *Medicine* March, 1896) on "Color Measurement and its Application in Medicine and the Arts," I ventured the assertion that the hemometers and hemoglobinometers now in use were decidedly defective, for the reasons then and there set forth. I further expressed my belief that a modification of Lovibond's "tintometer" would be found more accurate and more easy of appliion than any of the instruments (Fleischel's, Gower's, etc.) then in use.

I was at that time conducting some experiments with the tintometer as a measurer of blood tints and promised to relate my experiences with it when these were completed. I subsequently found that Dr. George Oliver had anticipated me in this matter and had, like myself, visited Mr. Lovibond's Color Laboratories at Salisbury, England, for the purpose of investigating certain questions in chromometry.

The result of these investigations has been incorporated in the Croonian Lectures for 1896, "A Contribution to the Study of the Blood and the Circulation," delivered last month by Dr. Oliver. The purpose of the tintometer and especially its value in hemometry are fully described in Dr. Oliver's third lecture, published in the London *Lancet* of June 20 last, and I take the liberty of drawing the attention of the profession to that particular issue.

For the further information of those who are interested in chromometry generally or in that division of it which includes the determination of the chemic constituents of the blood by variations in its color I would say that the agent for the tintometer in the United States is E. B. Meyrowitz, Optician, 104 East 23rd Street, New York. CASEY A. WOOD, M.D.

Albumin Testing.

GREELEY, COLO., July 22, 1896.

To the Editor:—In our JOURNAL of April 11, 1896, p. 732, Dr. J. W. O'Neill describes a new apparatus for the cold nitric acid test for albumin. A more available way, giving a large surface of contact for the urine and acid, with very little mixing of the fluids, is to put the urine to the depth of about half an inch into a beaker of suitable size, *e. g.*, two inches in diameter. Take up about ♏ xlv of the acid with a pipette. Put the point of the pipette down through the urine to the bottom of the beaker and let the acid escape slowly, especially at first. One way to be sure that the acid escapes slowly is to watch the top of the column of acid in the pipette. If this goes down slowly one may be pretty sure that the stream of escaping acid is a gentle one. Close the pipette tight again before taking it out to keep the small amount of acid remaining in the pipette from mingling with the urine.

A little calculation will show that in a two-inch beaker the surface of contact is ten times the size of that in a five-eighths inch test tube, which is the size in the O'Neill apparatus. I think Prof. E. S. Wood of Boston, was the first to point out the advantage of a large surface of contact.

One incidental point about the apparatus here described is that it is cheap and of use for more than this one test.

C. D. NELSON, M.D.

Railroad Rates.

DUNKIRK, IND., July 20, 1896.

To the Editor:—Is it not about time we were agitating the matter of railroad rates to the association. I have been thinking for some time that as a society or association we have been practically ignored by the railroad companies. It is true we have had the very liberal rate of *one and one-third fare.* A party of ten going a hunting or fishing can get such a rate at any time and on any road. Then look at the rates given other society meetings, such as the Christian Endeavor, the B. Y. P. U., etc. Also the great political conventions of the day. Within a few days of our meeting at Atlanta, the rate from Cincinnati was one fare. When we consider that the railroads get so much service from physicians and the only conpensation rendered is an insignificant *pass* over a few miles of road we think it is about time to raise a howl about the rates given to our annual meeting.

And now as our next convention will be held at Philadelphia which is a great railroad center, let us investigate the matter and see if we can not get better rates. Let us hear from others on this subject.

Yours very truly,

J. B. GARBER, M. D.

PUBLIC HEALTH.

Poisoned with Belladonna Greens.—A family were poisoned recently in a suburb of Paris by a dish of greens gathered in their own garden and served for dinner. Seeds of the belladonna had been sold to them by mistake for spinach seeds.

Brooklyn Health Report.—During the week ended June 18, there were reported 674 deaths. The death rate was 31.3 per thousand, in an estimated population of 1,125,000. Of the total deaths reported 418 or 62.0 per cent. were of children under 5 years of age, and 333 or 49.4 per cent. were of children under 1.

Compulsory Rest for Working Women after Childbirth.—The *Progrès Méd.* of July 4 states that the laws of Germany, Switzerland, Austria, Belgium and England compel working women to a four weeks' respite from the factory, etc., after childbirth. The Society of Public Medicine and Professional Hygiene is advocating the introduction of a similar law into France, with an allowance from the public funds during the time of compulsory rest.

Germany Officially Investigates Colorado Climate.—Dr. Engel Reimers, chief physician to the public hospital in Hamburg, Germany, has been sent to the United States, and Colorado particularly, to investigate the influence of the climate upon tubercular patients. The doctor believes that the experiments made with lymph and other alleged cures are as naught compared with the outdoor treatment, and that the dry climate of Colorado is ideal for that purpose.—*Col. Med. Jour.*, July.

Water Supply of Allegheny and Pittsburg, Pa.—The report of the bacteriologic examination of the water shows that the three Allegheny samples contained from 1,600 to 6,250 bacteria to the cubic centimeter, while the Pittsburg sample contained 656. The water of Allegheny is much worse than that of Pittsburg, but both are far beyond the limit of safety. These results fully explain the high typhoid fever rate of the two cities.

Boric Acid in Milk.—While the addition of boric acid to milk does not make it poisonous, it produces certain deleterious effects, which should cause its use to be prohibited. Chemically, the presence of borax not only tends to neutralize the development of acids, which takes place during the presence of fermentation, but it precipitates and renders insoluble certain salts contained in the milk which gives to it a portion of its value as an article of food. Beside this, its neutralizing action upon the juices of the stomach tends to retard digestion. Bicarbonate of sodium, so frequently used by mothers and nurses to keep milk sweet, has a similar action.—*Pac. Med. Jour.*, July.

Decision Relative to Local Quarantine.—Judge Albright, Pennsylvania, declares that a municipality may rightly and properly be held responsible for the maintenance of families quarantined by boards of health, because of contagious diseases. In making this declaration the court applies precisely the principle of law which is currently acted upon in all cases

where persons are deprived of their liberty through any legal process. The decision will be most helpful, as well as a wise and prudent determination of a pertinent question. It is sound public policy, and its effects must ultimately tend to secure more complete and valuable quarantine than could otherwise have been attained.

Decision Relative to Rear Tenements in New York City.—Justice Lawrence, in the supreme court, July 20, handed down a decision denying the application of the board of health for the appointment of appraisers to fix the value in condemnation proceedings of certain rear tenements which were ordered vacated by the board. It was asserted in the four cases on which argument was heard several weeks ago that the court could not name the appraisers, as the act under which they were to be appointed was unconstitutional, as it limited the powers of the appraisers within certain lines as to the value they could put on the condemned properties. The decision, while delaying the appointment of the commissioners, is really a victory for the board of health in that the act is practically declared to be constitutional. At the time of the hearing it was admitted by the attorney for the board that certain legal provisions had not been complied with in the petition, and an effort was made to allow the board to amend and let the question go to the court on its constitutionality alone.

Chicago Water Must Be Boiled.—The recent storms in the vicinity of Chicago have caused a dangerous contamination of the water supply of Lake Michigan, by driving the city sewage to every intake crib, from whence it is carried through the mains and used for domestic purposes. An analysis made July 27 of the water shows the following conditions:

Samples from	Free Ammonia.	Albumoid Ammonia.	Nitrates and Nitrites.
Fourteenth St. Station	.001	.012	None
Chicago Ave. Station	.001	.008	None
Hyde Park Station	Trace	.010	None
Lake View Station	Trace	.004	None
Laboratory tap	Trace	.012	None

Samples from	Chlorids.	Oxygen Consumed.	Sanitary Quality.
Fourteenth St. Station	.65	.180	Bad
Chicago Ave. Station	.65	.190	Bad
Hyde Park Station	.65	.230	Very bad
Lake View Station	.65	.190	Bad
Laboratory tap	.65	.170	Bad

Owing to the inadequacy of the pumping facilities at Bridgeport this contamination has existed for over four months, but not to the alarming extent which has been developed during the past week. Under these circumstances it is absolutely dangerous to use the water for drinking purposes without boiling. The Assistant Commissioner of Health Dr. Frank W. Reilly has given an interview setting forth the foregoing facts in the *Tribune* of July 28.

"Spitting" in Indiana.—The Indiana State Board of Health has issued a circular letter to all railroad officials asking them to have ejected from their trains every man who persists in spitting on the floor of the cars or stations after he has been warned not to do so. In the circular the board explains that the sputum contains the germs of la grippe, nasal catarrh, and various other diseases. It also declares that "spitting is a nasty and unnecessary habit," and explains that the Board of Health will pass a rule against spitting which will have all the force of law if the railroads will post it up and endeavor to enforce it. The circular adds: "When the rule is first published and posted up in public places this board will, of course, be loudly abused as foolish, impracticable and idiotic. Attention thus being gained, we will publish in every county reason for the action." Such a reform as the Indiana health officers have undertaken is needed in every part of the United States.

Identity of Croup and Diphtheria Officially Recognized in Quebec.—The following is a portion of an official circular over the signature of Dr. Elzéar Pelletier, the Secretary of the Board of Health of the Province of Quebec. It shows that formal action has been taken by that board placing croup under the same sanitary regulations as diphtheria. "Being informed that a great number of cases of croup escape the control of sanitary authorities, and that it is mostly due to the public being generally under the impression that croup is not a contagious disease, the Board of Health of the Province of Quebec authorizes the publication of the following definitions: Croup is nothing else than diphtheria, attacking more especially the respiratory tract (larynx). The expression laryngeal diphtheria designates better than the term croup the nature of the disease and should be preferably employed. Distinction should always be made between croup or laryngeal diphtheria, which is contagious, and false croup or laryngismus stridulus, which is not contagious. There are no membranes in laryngismus stridulus or false croup. The cough of croupal form which characterizes this disease is due only to a nervous element."

Mortality by Casualty from an Insurance Standpoint.—The *Medical Examiner* reviews the recent publication by the Mutual Life Insurance Company of New York on the above subject. The author, Dr. E. J. Marsh, is the statistical medical director of that company. It says: "The record is very interesting, but, after all, there is no broad principle to be deduced. So many died from railroad accidents, so many murdered, so many suicided," etc. We can hardly agree with the broad statement of the author that "no examination can give any protection from chance of accidental death." In all application blanks questions are asked regarding occupation, environment and physical defects, which, if rigidly and correctly answered, will give protection from chances of accidental death in some cases. That is one reason why they are inserted. The answers to the questions alone will cause the company to decline, provided the answer is such as to show an element of danger. Often an applicant is presented who is perfectly acceptable in all respects, save the possible element of danger from occupation and environments. No company, for instance, would accept a powder or dynamite maker, be he ever so healthy, knowing that any moment he may be blown to atoms, and yet no one but the medical examiner may have conveyed the information to the company. The examination revealed this fact, and, therefore, is a refutation of the unqualified statement of the Doctor in his essay. We fail to discover anything regarding the apparent fact, if it is a fact, that accidents run in families, so to speak. All underwriters have noticed that certain families seem to be destined to die from accidents; it may be one particular kind of accident, or it may be simply from violence. Why is it? Is it because there is a careless trait in the family, or is it due to physical defects in hearing or seeing? Or is it the old doctrine of fatality? Whatever it is, certainly accidents do occur again and again in a family. When this is the case it is best to investigate the applicant presenting the family peculiarly on general principles. The pamphlet is the result of the experience of the company represented and may not be the experience of another. Each company presents its own experience in this respect, and is governed by its own figures.

On Baths for Public School Children.—The *Boston Medical and Surgical Journal*, July 16, advocates the above named innovation, and argues in favor of the School Committee of Boston following German example, by the experimental introduction of shower baths into a school about to be built in the most squalid and congested section of the North End. The writer believes that, even where municipal baths are most numerous and well devised in Europe, the policy of providing special bathing facilities in schoolhouses for the children who resort to them for instruction has developed rapidly in the last decade and is now highly approved. The initial impulse to the wide-spread and admirable system of municipal baths now so common in Great Britain and on the continent is ascribed by the *Boston Herald* to the success which attended

the establishment of Liverpool's first public bath and wash house in 1842. That the Boston School Committee should be forced to consider the question of school baths before even the site of the first of Boston's municipal bath-houses has been determined bespeaks an enhanced and diversified interest in school hygiene in the community. Fortunately the advocates of school shower baths can point to the result of ten years' experiment by school boards in Germany and Switzerland. It would appear from the evidence cited from European experience that school shower baths have proven popular, cheap and efficacious wherever they have been given a fair trial. They are admitted to be very much cheaper, both in respect to original cost and cost of maintenance, than any other form of bath. Being self-cleansing, school shower baths have commended themselves to sanitarians and hygienists as superior to tub baths. If, as is claimed by Dr. Hartwell, bathing and dressing-room appliances adequate for bathing 2,000 children weekly during school hours can be placed in the Paul Revere School at a cost of less than $3,000, we are inclined to think that the School Board will do well to test the matter practically. It is admitted by the education authorities that schoolhouse air in Boston is bad. It is probably as bad in the North End as anywhere in the city. We have little doubt that the comfort, health and efficacy of teachers and pupils in the new school would be greatly enhanced, as a result of the purer air which would be had if the bodies of the pupils who come from "unplumbed" houses were occasionally subjected to a warm shower of water during the winter months.

Health Report.—The following health reports have been received in the office of the Supervising Surgeon-General, Marine-Hospital Service:

SMALLPOX—UNITED STATES.

New Orleans, La., July 11 to 18, 3 cases.
Pensacola, July 11 to 18, 1 case.

SMALLPOX—FOREIGN.

Callao, June 14 to 28, 61 deaths.
Genoa, Italy, June 5 to 12, 1 case.
Gibraltar, June 28 to July 8, 1 case.
Guayaquil, July 3 to 10, 2 deaths.
Hamburg, July 4 to 11, 1 case.
Licata, June 27 to July 4, 3 deaths.
Madrid, June 30 to July 7, 22 deaths.
Matanzas, July 3 to 10, 1 case, 1 death.
Montevideo, June 12 to 19, 1 case.
Odessa, Russia, June 27 to July 4, 11 cases, 4 deaths.
Osaka and Hiogo, June 20 to 27, 49 cases, 20 deaths.
Prague, June 27 to July 4, 2 cases.

CHOLERA.

Yokohama, June 12 to 19, 1 case, 1 death.

YELLOW FEVER.

Matanzas, July 3 to 10, 100 cases, 46 deaths.
Sagua la Grande, July 4 to 11, 59 cases, 7 deaths.
St. Petersburg, June 27 to July 4, 14 cases, 7 deaths.
Warsaw, June 13 to July 4, 7 deaths.
San Juan, Porto Rico, May 1 to 31, 14 cases, 4 deaths; June 1 to 30, 17 cases, 2 deaths.

NECROLOGY.

VINCENT LOMBARD HURLBUT, M.D., died July 24, at his home, 2342 Prairie Avenue, Chicago, Ill., of Bright's disease. Though most of his busy life had been spent in Chicago, Dr. Hurlbut was a native of New York State, where he was born in the town of West Mendon on June 28, 1829. His father was Dr. Horatio N. Hurlbut, a descendant of the Puritans. As a child he moved with his parents, first to the town of Sparin, Crawford County, Pa., and later to Jefferson, Ashtabula County, Ohio. Graduating from the Jefferson Academy, he studied medicine, first under his father at home, and later in a medical college at Cleveland. In 1851 he came to Chicago and entered Rush Medical College, from which he graduated the next year. During the same year he began the practice of his profession and followed it with unflagging application.

He soon gained prominence in his profession, and for a generation had been one of the leading physicians of the city. In 1873 he was appointed surgeon of the Woman's Hospital for the State of Illinois, and long held that position. He was a member of the AMERICAN MEDICAL ASSOCIATION, of the State Medical Society, was Vice-President of the Cook County Medical Society. Dr. Hurlbut was a thirty-third degree Mason and one of the oldest and most widely known members of that order in the West. He entered the Blue Lodge in 1860 and took the various degrees until he reached the highest, receiving the thirty-third in Boston in 1864. From 1863-5 he was commander of Apollo Commandery and in 1867 he was made Grand Commander of Illinois. In 1871 he was elected Generalissimo of the order, and in 1877 was chosen Grand Commander of the order at the triennial conclave at Cleveland, Ohio. Notwithstanding his success and honors he was very unostentatious in his manner and his acts of charity were innumerable, ever ready to alleviate suffering and unhappiness. Our genial colleague will also be greatly missed by former habitues of the old Grand Pacific Hotel, to which hostelry he was house physician for over twenty years.

PAUL P. PRENDERGAST, M.D., of Brooklyn died July 10, in the twenty-fourth year of his age, in consequence of an attack of pulmonary tuberculosis that made its onset about one year ago. He was a native of Brooklyn and a graduate in 1894 of the College of Physicians and Surgeons, New York. He was a nephew of Dr. J. J. Prendergast and the late Peter Paul Mahoney, M.C. He had been ailing for about eighteen months from pulmonary symptoms, which are supposed to date back to the time when he was in the hospital. He was very fond of his profession and for six months after the symptoms of his disease were discovered he continued to study in the class of surgeons to which he was attached at St. Mary's Hospital. He was for a time at Seney Hospital. He was also for a time an assistant at the Sloane Maternity in New York. Before his his illness Dr. Prendergast was in good health. He was six feet tall and weighed nearly two hundred pounds. But his health failed to such a degree that it was considered expedient that he should leave the city. He went to Saranac Lake in the Adirondacks, where he spent about a year. He returned home early in the present year and later took a trip to California. While in the mountains of the Pacific coast he contracted what is known as the mountain fever. His health gradually grew worse. He realized his condition and came home to die, a victim to hospital tuberculosis, hastened and fostered by an over-zealous attention to clinical study.

THERON Z. GIBBS, M.D., of Fort Ann, N. Y., was killed early in July, by being struck by a train while he was crossing the track near his home. He was born at Shoreham, Vt., in 1826. He was graduated from the Castleton Medical School in 1853. He practiced in New York State until the breaking out of the war, when he entered the volunteer service as an assistant surgeon of the Fifteenth New York Engineers, becoming full surgeon in 1863; his regiment was then with the Army of the Potomac. He was ex-President of the Washington County Medical Society and had been the health officer of Fort Ann from 1888 to 1890, in which town he had practiced fully thirty years. He was a member of the State Medical and other societies. He had been twice married and is survived by his widow and three children.

WILLIAM A. PIPER, M.D., of Philadelphia died July 6, aged 77 years. He was a graduate from Jefferson Medical College, in 1844.

JAMES THOMAS PETTUS, JR., M.D., of New York City died on July 13, at Reading, Pa., He was a graduate from the College of Physicians and Surgeons, New York, of the class of 1844.

S. H. BOTTOMLEY, M.D., of Chicago July 26, from a complication of kidney troubles. Dr. Bottomley was born in Birmingham, England, fifty-one years ago, and came to Chicago in 1866. He was a graduate of Lind University, and during the Civil War served as a surgeon.

SOCIETY NEWS.

The Central Texas Medical Association.—This association was in session at Waco July 14 and 15. Among the papers read and discussed were "Medical Legislation," by Dr. J. D. Law, and "Hypnotism in Disease," by Dr. R. W. Park.

Chautauqua County (N.Y.) Medical Society.—The annual session was held at Chautauqua July 14 with a large attendance. The following officers were elected for the ensuing year: President, E. S. Rich; vice-president, Morris N. Bemus; secretary, C. A. Ellis.

Medical Society of the County of Clinton, N. Y.—This society held its semi-annual meeting at Plattsburg, July 14. Dr. Henry C. Fisher, U. S. Army, was elected an honorary member of the society. An interesting paper, entitled "Purpura," was read by Dr. Taylor, who also presented a clinical case in illustration.

The Lexington and Fayette County (Ky.) Medical Society meeting was held at Lexington, Ky., July 13, and the following officers were elected for the ensuing year: President, R. L. Willis; first vice-president, J. C. Carrick; second vice-president, J. Y. Oldham; secretary, R. C. Falconer; treasurer, Ed. Green; librarian, N. L. Bosworth.

Oneida County (N. Y.) Medical Society.—A meeting of the Oneida County Medical Society was held at Utica, N. Y., July 14. Dr. Dye presided. Dr. F. H. Peck read a paper on "Ununited Fractures." Dr. Glass reported two cases in which the Murphy button had been successfully used. Dr. A. I. Simmons gave a sketch of the life of the late Dr. Claude Wilson of Waterville. Dr. Smith Baker also paid tribute to the deceased.

Wyoming County (N. Y.) Medical Society.—The annual meeting was held at Warsaw, N. Y., July 14. The following officers were elected for the ensuing year: F. R. Barross of Attica, president; A. E. Ellinwood, vice-president; A. B. Straight of Perry, secretary. Papers were read by Prof. Floyd S. Crego of Buffalo, "Value of Animal Extracts in the treatment of Nervous and Mental Diseases;" James E. Walker of Hornellsville, "Renal Auto-intoxication;" Cordelia E. Greene, "Leprosy on the Hawaiian Islands." The next meeting will be held in Castile the first Tuesday in October.

The XIVth Congress of Internal Medicine in Germany.—A feature of this congress which has been much commended, was the presentation of each address in two parts, one by a physician and the other by a surgeon, who regarded the subject from such different points of view. It was held at Wiesbaden in April. Nothing of an epoch-making character was presented, although Ewald used that term to express his appreciation of Baumann's discovery of the presence of an organic compound of iodin in the thyroid gland, "which gave us our first real insight into its essential elements, and cast in a new mold the application of the thyroid preparations to therapeutics, without contradicting our previous knowledge." "In Baumann's thyroiodin we have secured the long-sought exactness in the amount and strength of doses, and as it contains all the essential elements of the gland, it can be substituted for the fresh, the dessicated and the extracts of the gland." Ewald administers it in very small doses at first, gradually increasing, but always keeping within a daily maximum of ten tablets, corresponding to 3 mgr. iodin. The fact was established once more that the fever of infective diseases is now considered a salutatory reaction of the organism in its struggle with the microbes. The revulsion of feeling in regard to the effect of alcohol in fevers was also noticeable, and the rapid fall of temperature in septic and puerperal fevers after the administration of large quantities of alcohol dwelt upon. Rosenfeld announced that urotropin and urea are efficient in the treatment of uric diathesis, and 5 to 20 grams of urea a day produce no inconvenience. The diet must include caseate of sodium, peptone or aleurone, and meat, fat and sugar be excluded. Uric acid diminished 24 to 70 per cent. under this treatment. Noorden stated that lime combined with a phosphate is eliminated rapidly by means of increased intestinal secretions, and is therefore much to be preferred to sodium and potassium in preventing renal concretions of uric acid and keeping the blood in a neutral state. By avoiding intestinal irritation, the use of four grams a day of monophosphate of lime can be kept up quite a long while.

MISCELLANY.

Trained Masseurs for the French Army.—The war department of France has established three schools where massage is taught as a science to a corps appointed for the purpose. One is at Paris, another at Lyons and the other in Algeria. The course requires six weeks.

Training School for Nurses Wanted in Rio Janeiro.—*O Brazil-Medico* is urging the establishment of a training school for nurses of both sexes at Rio Janeiro, where the articles in the press on the abuses in the National Insane Asylum are now quite in vogue. Buenos Ayres already has a model establishment of the kind.

Rape in Virginia.—Section 3,680 of the code of Virginia defining rape, was amended in March, 1896, substituting fourteen for twelve, as the age of the female affected thereby; extending its application to any female who is an inmate of a deaf, dumb or blind institution who is a pupil therein, and reducing the minimum penalty of confinement in the penitentiary from ten to five years.

Two New French Hospitals.—The one at Clichy was erected through the generosity of Jules Gouin, at an expense of $240,000. It occupies a large square, one side of which is devoted to a model apartment house for working men. The other hospital is at Auteuil, and is chiefly designed for the training of army nurses. There are twenty-five beds, a large garden and an open space in the rear that could be filled with tents in time of war so as to extend the capacity of the hospital indefinitely. It is the work of the Association des Dames Francaises.

The "Laryngoscope."—We have received No. 1, Vol 1, of the *Laryngoscope*, a journal devoted entirely to the consideration of diseases of the nose, throat and ear. The journal intends to fill the niche between the strictly special and the general journals. with that class of physicians who confine themselves entirely to the treatment of the diseases mentioned or who pay especial attention to these troubles while maintaining a general practice. We extend the hand of fellowship to the new journal.

Virulence of Klebs-Loeffler Bacillus Slightly Attenuated by the Action of Roentgen Rays.—The *Prov. Med.* of June 27 (Lyons) reports some experiments with cultures and diphtheria toxins exposed for seven hours to the Roentgen ray. Cultures made and animals inoculated afterward with them showed in each case a slight diminution in the virulence. The bacilli did not develop so rapidly in cultures, and the animals survived four to nine hours longer than those inoculated with toxins that had not been exposed to the ray. It adds that Lortet considers the action of the ray beneficial in augmenting the resisting powers of the animal exposed to it, rather than in impairing the virulence of the microbe.

Our Mexican Exchanges.—The monthly bulletin of the Health Department of Mexico is not the usual dry record of statistics, but a handsome, blue-covered, 32-page pamphlet containing several popularly written and instructive articles on hygiene and the prophylaxis of various diseases, printed with large,

clear type. The statistics are also compiled in a manner that will render great services to science in time. The publications of the Academia Nacional de Medicina are also conducted with great enterprise, and according to modern methods. A special scientific study of the plants of Mexico is now under way, which is already an important contribution to science. Another journal is conducting a special and comprehensive study of the manifestations of tuberculosis in Mexico.

Thrombus of the Labium.—Dr. S. A. Goodwin reports a case occurring after a natural and easy confinement. He says: The mass increased until it had acquired the size of a newborn child's head, exceedingly painful, and extending to the perineum. The labium was everted so that it appeared to be covered externally by the mucous membrane. We applied cloths wrung out of hot water and solution of acetate of lead, and succeeded in keeping it from rupturing. The tumor became dark in color, almost black, and very hard. In three days the tumor was ruptured and contents removed, which was a dark coagulation of blood. The wound healed rapidly, and in five weeks all that remained to indicate any abnormality was the cicatrix.—*Ind. Med. Jour.*, July.

Injured Person's Duty.—In the personal injury case entitled West Chicago Street Railway Co. v. Stephens, the appellate court of Illinois, held, July 1, 1896, certain instructions erroneous which required the plaintiff to show what part of his injuries were attributable to the original cause as separated from those due to the lack of care by him in getting cured of them, as not stating the rule of law in regard to the duty of one who receives an injury is under to take reasonable care that his injuries shall not, by undue neglect, become aggravated, also because such instructions failed to include the element that the plaintiff had knowledge, or reasonable cause for knowing, that he needed better care and attention in getting cured than he gave or caused to be given to himself, and that such increased care and attention were within his means and power.

Experimental Tuberculosis Attenuated by the Roentgen Ray.—Lortet and Genoud report a series of successful experiments with guinea pigs inoculated with tuberculosis in the inguinal region. Three selected at random out of the eight inoculated, were tied to a board on their backs, and the inoculated region exposed to the Roentgen ray for one hour each day, from April 25 to June 18. Ganglionary abscesses developed in the control animals, which discharged spontaneously a whitish suppuration; the inguinal ganglia grew soft and could not be distinguished from the surrounding tissue. The animals also showed great emaciation. On the other hand, the three animals exposed to the Roentgen ray gained in weight; they had no abscesses, and their inguinal ganglia remained hard and distinct, with no tendency to suppuration. These results prove that the Roentgen ray materially modified the acute development of the tuberculous infection, and justify its application to human beings, especially children, with superficial tuberculosis, limited to the pleura, or with tuberculous ganglia in the mesentery.—*Bulletin Médical*, July 1.

New Application of the Roentgen Ray. Fluorescent Screen.—An important advance in the application of the Roentgen ray to medicine is described in the *Semaine Méd.* for July 1. Instead of taking photographs, it is now possible to look directly into the body and see the skeleton with our own eyes. This is accomplished by means of a screen made by gluing a piece of cardboard ½mm. thick, on a pane of glass. A square piece is then cut out of the center, 10x25 cm. and the space thus left on the glass is filled with the finely pulverized chemicals, which we know become fluorescent under the Roentgen ray; double cyanid of potassium and platinum, or double cyanid of barium and platinum. This is covered with another piece of cardboard the same size as the first, enclosing the chemicals. If this screen is held at the cathode end of a Crookes' tube concealed in a pasteboard box or covered with a cloth, the part of the frame that holds the chemicals is instantly illuminated, and a hand interposed between the illuminated frame and the invisible Crooke's tube, becomes transparent, so that nothing but the bones can be seen. Promising results have already been secured by Buka, Roentgen, Salvioli, Lewy, Grunmarch, du Bois-Reymond, etc., who have distinguished the skeleton and organs throughout the body, and diagnosed several cases of arterio-sclerosis, etc., with amazing accuracy. Becher of Berlin adds the suggestion that lime water injected into the stomach or intestines or the introduction of air prevents the passage of the Roentgen ray.—*Deutsche Med. Woch.*, July 2.

Bicycle Riding among Those Having Unsound Legs.—Mr. E. B. Turner, the author of a series of special reports in the *British Medical Journal* on "Cycling in Health and Disease," has not found that this form of exercise is injurious in cases of impaired venous circulation. He says ordinary varix of the lower limbs, however produced is very frequently much benefited by regular cycling, but if the enlarged veins be of considerable size, a stocking should be worn. Out of a very large number of such cases the writer has never seen the slightest increase which could be put down to riding, not even in men who raced long distances on the road and path, while in many cases of infiltration of the skin and varicose eczema, a perfect cure has resulted. A suspender should always be used if the rider has a varicocele, as a protection from injury by the saddle, when the roads are rough and lumpy. Piles diminish and cease from bleeding in a wonderful fashion by the time a few hundred miles have been judiciously covered, and though external masses must remain, they do not as a rule increase.

Complications and Sequelae of Diphtheria.—The complications are those of extension to or ulceration of the respiratory tract and involvement of other regions from toxin poisoning. Locally there is hemorrhage, due to ulceration, from the nose, throat and bronchi; occasionally petechial hemorrhages under the skin and other skin rashes, especially erythema, appear. By extension of the process or by inhalation of particles of membrane, acute bronchitis, more especially capillary bronchitis, or broncho-pneumonia with atelectasis or gangrene, may develop. Kidney symptoms are common, albuminuria is present in severe attacks; occasionally suppression of urine is present, and rarely, dropsy develops later. Heart failure or fatal syncope may occur at any time during the attack or after convalescence has commenced. Of the sequelæ, paralyses are the most important. They appear usually during the second or third week of convalescence, in from 10 to 15 per cent. of cases. One of the most common is that of the velum palati. Sometimes the eye is involved and strabismus, ptosis or loss of accommodation may result. Facial paralysis sometimes occurs. One of the limbs may be involved. Occasionally multiple neuritis develops.—Dr. Howard Van Rensselaer in *Albany Med. Annals*, July.

Subcutaneous Injections of Artificial Serum in Anemia and Septicemia.—The meeting of the Académie de Médecine, June 30, was chiefly devoted to a discussion of this subject. Péan closed the discussion by remarking that all were evidently unanimous in regarding subcutaneous injections as marvelously effective in hemorrhages and acute anemia, and as a possibly useful adjuvant in septicemia. But as to intravenous injections the few remarkable successes announced here and there are isolated cases, and he believes it is better to return to the subcutaneous method. Pozzi mentioned a case of "veritable resurrection" from death in post-operative septicemia. He strongly advocates subcutaneous injections as effective, harmless and easily administered. Pinard stated that in the Baudelocque clinic they lost every woman in acute anemia from hemorrhages, from 1882 to 1893. Since 1893 he has been treat-

ing these cases with subcutaneous injections of artificial serum and has not lost one of the seventeen presented. He has never had occasion to inject more than 1400 grams in the twenty-four hours. Tarnier has also seen four women revive when they were practically dead from excessive hemorrhages. He has never used the artificial serum in septicemia. Champonnière deprecates the use of enormous injections, and has never found the serum beneficial in septicemia. Porak has used the subcutaneous injections to advantage in eclampsia.—*Bulletin Médical*, July 1.

Patent Medicine Scandal at Bellevue Hospital.— The Boston *Medical and Surgical Journal* for July 2 reports that motives other than scientific have brought to pass a scandal of magnitude, concerning which the medical staff of the hospital concerned has shown a quiescence, if not acquiescence, that apparently merits its condemnation by the profession and the public. It may have been the "fault of Mayor Strong," as has been said, but the staff is not obliged to continue on duty if an outrage is committed against its most sacred principles. The *Journal* says: "Considerable comment has been caused of late by the setting apart of the Commissioners of Public Charities, in spite of the protest of the medical board of the hospital, of one of the alcoholic wards of Bellevue Hospital for the use of a certain physician of New York, but not connected with the institution, who is to treat patients by means of a secret remedy which he claims to have discovered. This physician is Dr. Isaac Oppenheimer, and the curious part of the matter is that up to the present time he has been a regular physician in good standing, being a graduate of the College of Physicians and Surgeons (in the year 1876), a Fellow of the Academy of Medicine and a member of the Medical Society of the County of New York. In the only case that has thus far been made public of which Dr. Oppenheimer had charge the patient, who had been transferred to the Bellevue from the Harlem Hospital, died a few hours after his admission to the ward. In this case, however, the Doctor asserts that the man was suffering from an advanced stage of Bright's disease, and that he made no attempt to treat him with his new "cure."

A Medico-legal Case Affecting a Young German Practitioner.—The *Medical Press and Circular* makes comment on a recent medico-legal case in Germany. The central figure of this case was a young medical practitioner of Spandau, who became qualified in 1893; he was accused of causing bodily injury through negligence. About a year ago a young woman, recently married, presented symptoms of threatened abortion. She consulted two medical men who agreed as to her condition. She then placed herself under the care of the accused, who declared that a harmless operation was necessary. This she consented to, and the operation was performed, with the result that the patient died of hemorrhage two and a half hours afterward. What the operation was is not clear, but it appears to have been a curettement of the uterus, in the course of which perforation of the walls of the uterus took place. As a result of the postmortem examination the young practitioner was accused of culpable negligence. The two principal medical witnesses were the Kreisphysikus, Dr. Reinicke and Prof. Landau. Whilst Dr. Reinicke laid the whole of the blame on the accused, Prof. Landau laid it on "the present state of scientific knowledge and the defective clinical training of students. Operations such as the one in question were not taught practically to young practitioners, and they had to gain their experience from their patients. Moreover, science followed the fashions, and there was a widely-spread school that had given up the plan of observation and waiting, and taught a method of treatment that the witness must characterize as brutal, and must, therefore, lead to brutal consequences. The accused appeared to belong to this modern school; the woman was, therefore, not the victim of his negligence, but the victim of the modern tendency of medicine. The court then requested a written opinion on the matter from Dr. Landau, and at the same time a control opinion, or Obergudachten, from the Royal Medizinal Collegium. It is well to bear in mind that Prof. Landau is not an ordinary professor of gynecology in charge in either of the teaching clinics, but a professor extraordinary with a privilege of private teaching."

American Tenacity.—M. Patenôtre, the French Ambassador, went crabbing the other day at Cape May. He soon caught a crab, and not being familiar with the creature he grasped it with his left hand. Then the crab promptly caught him. The ambassador was evidently both pained and surprised. He instinctively grasped it with his right hand, and the crab in turn seized his right hand. Thereupon the captain of the yacht went to the rescue of M. Patenôtre, who remarked: "Ze tenacity of ze creature is so very much Americaine!"

Oregon Opium Law Constitutional.—In 1887 the legislature of Oregon passed "An act to regulate the sale and gift of opium, morphin, eng-she or cooked opium, hydrate of chloral or cocain." It provides that no person shall have in his or her possession or offer for sale any of the drugs enumerated, who has not previously obtained a license therefor, unless, as it clearly implies, it be obtained on the prescription of some duly qualified physician or pharmacist for medicinal purposes. The license is to be issued only to regularly qualified physicians who keep a stock of drugs and medicines for their own use in prescription, and regularly qualified druggists. This law the supreme court of Oregon holds constitutional, in the case of Luck v. Sears, decided April 27, 1896. Speaking only of opium, it says that it is an active poison, and has no legitimate use except for medicinal purposes, though it is frequently used to produce a kind of intoxication by smoking or eating, a loathsome, disgusting and degrading practice, which results not only in pauperism and crime, but also in the serious impairment of the mental and physical condition of those who indulge in it. The sale and disposition of such a drug, it therefore thinks, may unquestionably be regulated and controlled by law, and whether its nature and character is such that, for the protection of the public, its possession by unauthorized persons should be prohibited, is a question of fact and public policy, which belongs to the legislative department to determine. The discretion of the legislature in the employment of means which are reasonably calculated to protect the health, morals, or safety of the public is very great, and so long, as it does not infringe upon the inherent rights of life, liberty and property, either directly or through some limitations upon the means of living or some material right essential to the enjoyment of life, its determination is conclusive upon the courts. And, while the State can not assume to be the guardian of morals, it has the undoubted power to enact measures calculated for the suppression of such form of vice as threaten its welfare by generating disease, pauperism and crime. No right secured by the fundamental law is interfered with or impaired by this legislation relating to opium, because the possession and use of the drug are not restrained thereby, so as to destroy its value as a remedial agent, its only recognized legitimate use. The principle maintained by some courts that the legislature can not make it a crime to have in one's possession intoxicating liquors, although it may regulate, or even prohibit, the sale and disposition thereof, the court declares has no application here.

Drill Regulations for the Hospital Corps, U. S. Army.—The new drill regulations will probably be issued before this paragraph is in print. The board of officers to whom the revision was entrusted consised of Majors Hoff and Havard and Captain Cabell. The booklet is of the same size and style as the last edition. There is practically no change in the methods of falling

in the detachment, or of marching and maneuvering it without litters; but it is to be noted that officers will not hereafter wear swords at drill, and hospital stewards and acting stewards will wear the belt but no equipment of any kind unless specially ordered. In paragraph 48, which describes the recently adopted hand litter, is the first notable change from the old regulations; and paragraph 49 which formerly read: "One pair of regulation slings is permanently attached to each litter" now reads: "One regulation sling is issued to each private as part of his equipment." On this change is based the material changes in the new drill regulations. With the slings fixed on the handles of the litters the bearers at every command to lower litter had to become unhitched from them and at every lift litter they had to get into harness again and have it adjusted, while in many of the movements the bight of the sling when not on the shoulders of the bearer had to be looked after specially to prevent its getting in the way. With the present individual slings the bearers have merely to slip the loops of the sling on or off the handles when they want to lift or lower the litter, and as the bight is always on their shoulders it is never in the way. This simplifies the drill greatly, and it is in fact a return to the method of the Leavenworth board, published in 1890, the fixed sling now discarded having been introduced in 1893. The illustrations, with the exception of the diagrams for the marchings, are all new. The slings on the men, the new style of army cap and the absence of the large sword bayonet-like knife give the members of the hospital corps an unfamiliar appearance.

Diaphragmatic Hernia.—S. M. Fortier, M.D., reports a case in *N. O. Med. and Surg. Jour.*, July: Patient, a colored male, aged 41 years, states that until two weeks prior to his admission in hospital, he has never been sick. At above mentioned time he was stricken with severe abdominal pain, which necessitated his abandoning work. His condition grew steadily worse, pain more acute, constipation, distension of the abdomen supervening, and exacerbations of vomiting were noted. Examination at the hospital: Conscious and answering questions rationally, but intensely collapsed; abdomen much distended, especially in left hypogastric region. Percussion revealed a tympanitic sound, extending to the lower border of the fourth rib on the left side. Auscultation showed an absence of the vesicular murmur. Auscultation of the opposite lung revealed a supplementary puerile respiration. Heart sounds normal, although rapid and tumultuous; apex beat displaced slightly toward the right. Patient complained of a dull pain in the umbilical region, followed at times by lancinating pains. Dyspnea marked, not persistent and progressive, but coming on in paroxysms. Hiccough, a permanent and distressing symptom, was accompanied, at times, by vomiting. Deglutition, although easy, was followed by immediate vomiting. Any movement on the patient's part would aggravate the symptoms. An enema of soap and water was administered, high up, through the rectal tube, but with no results. The diagnosis of intestinal obstruction was made and the patient transferred to the operating room. His condition was so alarming that it was deemed inexpedient to interfere surgically. Pulse 150; respiration 45; temperature subnormal. The patient was surrounded with cans of hot water and stimulants given. He rallied under this treatment, but died the next day. Autopsy: Great distension of the transverse and ascending colon and cecum was observed. Descending colon collapsed. The obstruction was found to be due to the passage of the colon through the diaphragm, to the left of the median line and behind the central tendon. It was impossible to remove, by traction, the intestines from the thorax, as a previous inflammation, following gangrene of a portion of the strangulated gut, had firmly agglutinated the adjacent structures. The left lung was collapsed, the pleura forming a part of the hernial sac; adhesions were firm, especially in the fifth interspace, and pointing of the sloughing gut was observed to have taken place in this region. This report shows the difficulty of the diagnosis of diaphragmatic hernia.

Kroenlein's Surgical Experience with Carcinoma of the Stomach.—In sixty-seven cases (patients from 27 to 66 years of age), twenty-six were inoperable; in twenty-two cases he performed exploratory laparotomy; in four gastroenterostomy, and in fifteen resectio pylori. In one of the latter 13 cm. of the small and 22 cm. of the large curvature were resected. The patient is now, a year and a half after the operation, pursuing his usual occupations in good health. Of the rest, four died and ten recovered. Five still survive without a relapse; two died from intercurrent diseases, and four had relapses after an average of 597 days (one after 794 days). The immediate deaths were due to collapse in two cases, in one to inflammation of the lungs, and in another to gangrene of the lungs and peritonitis following necrosis in the region of the suture. He recommends morphium ether for the necrosis, and the strictest asepsis. The preliminaries, emptying the stomach and bowels, are to be as limited as possible. He remains loyal to the Billroth-Wölfler method as superior to all others, and asserts that Kocher's success in his operations is due to his fine technique rather than to his method. He gives a little milk and tea the day after the operation and abandons rectal feeding the fourth day. In only one of the four cases of gastroenterostomy was the result satisfactory; the vomiting and distress passed away for three months, when death ensued. He urges a more accurate knowledge of the indications of this operation. Six of the cases of carcinoma that seemed operable but were not operated upon, survived an average of 209 days, the inoperable 77 days, and after exploratory laparotomy 139 days. The article in the *Beiträge zur klin. Chir.*, Vol. XV, No. 2, is completed with photographs of the preparations made of the cases.—*Centralbl. f. Chirurgie.*

Injections of Carbolic Acid in Serocysts.—Dr. Victor H. Coffman advocates its use in preference to the knife or irritating injections of iodin, on account of simplicity of application, efficiency and freedom from danger. His method of treatment for hydrocele is as follows: By the use of the hypodermic syringe, one dram of 95 per cent. solution of pure carbolic acid, inserted into the superior part of the tumor, guarding the superficial veins of scrotum, is injected forcibly into the sac without previous evacuation of the fluid. Should the tumor be excessively large, two drams will be necessary for the first treatment; withdraw the syringe slowly after two minutes, preventing escape of fluid, apply a little vaselin to the surface, or mop the parts with alcohol if any of the acid has escaped, put on a dressing of gauze to protect from oozing, and the patient is permitted to go about his occupation, no risk incurred or pain endured. Within twenty-four hours a slight reaction follows, which lasts from two to five days, and the size of the tumor diminishes gradually. Should it not recede, then repeat the injection, and within one month all traces of enlargement disappear. For bursa of the patellar tendon, a dram of acid is injected, and a second injection of one-half dram, five days thereafter, is necessary in about one-third of the cases.—*Western Med. Review*, July.

The Mauser Rifle in the Cuban Revolution.—The *London Lancet* quotes an article in the *Revista de Ciencias Medicas* of Havana, written by Surgeon Enrique Pedraza of the Spanish Army, on the effects of the Mauser projectile as seen by him in the present war. He points out the great difference which exists between this and the older forms of projectile, as the Remington and Freire Brul. These latter being much larger and having a smaller initial velocity cause large openings and carry septic materials into the wounds they make which are therefore very difficult to render aseptic on the field and consequently when

they come under proper treatment in a hospital are in a condition which is very difficult to manage, especially when, as is frequently the case, the hemorrhage has necessitated the use of perchlorid of iron which increases the size of the wound, or when a bone has been hit, and, as usually happens, even at a distance af 100 or 150 yards, is shattered. The Mauser projectile as issued in the Spanish army is 3 centimeters in length and 7 millimeters in diameter, and consists of a hard nucleus of lead and antimony coated with steel, outside of which is a coating of nickel and copper alloy, the whole weighing 13.7 grams and having an initial velocity of 632 meters per second, which enables it to pierce a Krupp steel plate 10.5 millimeters in thickness at a distance of 50 meters. Such a projectile ought, it might be thought, to produce a clean and minute wound with little hemorrhage, easy to close on the field and therefore likely to heal rapidly in the hospital, more especially as the bones would be bored rather than shattered and as there would be little chance of foreign matter being introduced into the wound by the projectile itself. These expectations are, however, by no means always realized, and the first few cases of primary wounds from a Mauser projectile which Dr. Pedraza saw at Manzanillo very greatly surprised and disappointed him. With longer experience, however, he learned that the benign results he had expected to see do occur, but only when the enemy is 150 yards or more distant. When the patient is shot at from ten to seventy yards the destruction of the tissues is very great, and it is this that has given rise to the suspicion that explosive bullets were being used, especially as the orifices of entrance and outlet are sometimes so small that they can scarcely be seen. The explanation suggested is that the shock which the enormous velocity of the projectile produces on entering the soft parts causes them to behave as a fluid or semi-fluid does when enclosed in a box and "shot through," the hydraulic pressure bursting the sides, or if an opening be left, driving a column of the fluid through it. As to how far any destruction of the projectile itself may be a contributing factor he has no direct evidence, but from specimens he has seen of the Wagner and Männlicher projectiles after experiments made by Dr. Cardenal, which he showed at a lecture before the Cataluna Academy of Medicine, he thinks it probable that the projectiles do become more or less disintegrated when they hit at short distances. In striking contrast to such wounds are those produced at 150 yards or more by the Mauser rifle. Here the entrance and outlet are very small and there is but little evidence of internal destruction, even bones being tunneled through without fracture, and as aseptic treatment is possible from the first a rapid recovery may usually be anticipated. Thus, in one case where the projectile entered the abdomen in the eighth intercostal space on the right side, passing through the stomach and coming out three fingers' breadth on the left of the sternum, though the ninth rib was fractured and the patient suffered from vomiting, hematemesis and fever, he very soon improved and recovered completely. In another case the projectile entered the left frontal eminence passing out by the right parotid region. The patient suffered from concussion of the brain, with some difficulty of vision of right eye, but recovered in twenty-six days. If, therefore, it could be arranged that fighting should never occur at less than 200 yards distance the Mauser would, Dr. Pedraza thinks, be a most humane weapon.

Hospitals.

THE GERMAN HOSPITAL, SAN FRANCISCO, CAL.—At the regular July meeting of the board of directors the following staff of physicians was elected for the German Hospital: Visiting physicians, J. F. Morse, H. Kreutzmann, G. Dresel, R. Baum; consulting physicians, Beverly MacMonagle, W. A. Martin, D. W. Montgomery, L. Newmark, M. Regensburger, Paoli de Vecchi, A. Wilhelm. Max Saloman retains the position held by him for the past two years as city physician of the society.

CITY HOSPITAL, MARQUETTE, MICH.—The new city hospital threw open its doors to the sick of the city July 13. The following named physicians compose the staff: Geo. J. Northrup, A. Desjardins, O. G. Youngquist, F. McD. Harkin, A. A. Foster, J. H. Dawson, E. B. Patterson, C. G. Dick, H. J. Hornbogen.

Louisville.

ANTHRAX.—An epidemic of anthrax has been found raging in the herd of milk cows owned by a dairyman in the western portion of the city, a number of deaths having occurred among them. The health authorities have taken the matter in hand and have isolated the herd, burned the carcasses and are boiling and burying the milk from the rest of the herd. Thus far the trouble has been limited to this one herd and no serious spread is anticipated, owing to the prompt action of the city and State officials.

THE PUBLIC SERVICES.

Army Changes. Official List of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from July 18 to July 24, 1896.

Capt. Paul Clendenin, Asst. Surgeon (Ft. Warren, Mass.), is hereby granted leave of absence for one month.

Capt. Edgar A. Mearns, Asst. Surgeon (Ft. Myer, Va.), is granted leave of absence for three months, to take effect on or about Aug. 3, 1896.

Capt. Geo. E. Bushnell, Asst. Surgeon, extension of leave of absence granted is further extended one month.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending July 25, 1896.

Asst. Surgeon L. Morris, detached from Indian Head proving ground, ordered home and granted one month's leave.

Asst. Surgeon F. C. Cook, detached from treatment at the New York hospital and ordered to proceed home.

Medical Director G. H. Cook, detached from special duty at Philadelphia and ordered to take charge of hospital there.

Medical Director D. Kindleberger, detached from duty in charge of hospital at Philadelphia, ordered home and await orders.

Medical Inspector W. G. Farwell, ordered to special duty at Philadelphia attending officers.

Change of Address.

Armstrong, C. L., from La Due to Webster Grove, Mo.
Bertling, A. E., from 360 Blue Island Av. to 512 Ashland Boul., Chicago, Ill.
Burns, R. J., from Rockford to 101 Galena St., Freeport, Ill.
Bishop, L. F., from Morristown, N. J., to 30 W. 36th St., New York, N. Y.
Habermass, A., from 3154 Shenandoah Av. to 3317 S. 18th St., St. Louis, Mo.
Luebbers, A., from Dallas, Texas, to 2432 Larimer St., Denver, Colo.
Makeun, G. H., from Philadelphia to Cresson, Pa. (until September 15).
Prentiss, D. W., from Aix la Chapelle, Germany, to Zurich, Switzerland.
Rockey, A. E., from The Marquam to 671 Gilson St., Portland, Ore.
Rohé, Geo. H., from Catonsville to Sykesville, Md.

LETTERS RECEIVED.

Allison, H. E., Fishkill Landing, N. Y.; Alma Sanitarium Co., Alma, Mich., (2)
Burr, C. B., Flint, Mich.; Bittman, Chas. W., St. Louis, Mo.; Bartlett, Edward P., Springfield, Ill.; Boehringer, C. F. & Soehne, New York, N. Y.; Butin, Mary Ryerson, Madera, Cal.; Bower, J. L., Reading, Pa.; Brodrick, J. P., Boston, Mass.
Colvin, D., Clyde, N. Y.; Cook, G. F., Oxford, Ohio, (2).
Dooley, A. J., Marion, Ind.; Douglass, J. C., Franklin, Ky.; De Courcy, J. O., St. Libory, Ill.; Dale, J. Y., Lemont, Pa.; Dorman, Wm. J., Philadelphia, Pa.
Elkhart Carriage and Harness Mfg. Co., Elkhart, Ind.; Ellis, Griffith, Dayton, Ohio.
Farber & McCassy (Drr.), Dayton, Ohio; Fairchild, Bros. & Foster, New York, N. Y.; Farrington, J. M., Binghamton, N. Y.
Gihon, A. L., New York, N. Y.
Haven, O. D., Youngstown, Ohio; Herdman, W. J., Ann Arbor, Mich.; Hummel, A. L., Adv. Agency, New York, N. Y., (2); Hewitt, C. N., St. Paul, Minn.; Harnden, R. S., Waverly, N. Y.; Holmes, Bayard, Chicago, Ill.; Hussey, E. J. & Co., New York, N. Y.; Holt, E. E., Portland, Me.; Haldenstein, J., New York, N. Y.
Kenyon, Paul, Minneota, Minn.; Kress & Owen Co., New York, N. Y.; Kyle, De Braden, Philadelphia, Pa., (2).
Lee, Elmer, Chicago, Ill., (2); Lichty, D., Rockford, Ill., (2); Lockwood, E. K., Virden, Ill.; Love, I. N., St. Louis, Mo.
Maclean, Donald, Detroit, Mich.; Mulford, H. K. & Co., Philadelphia, Pa.; Mackie, L. V. G., Attleboro, Mass.
O'Gorman, James, Baltimore, Md.; Osmun, L. C., Washington, D. C.
Paquin, Paul, St. Louis, Mo., (2); Press Clipping Bureau, The, Boston, Mass.; Peterson, Reuben, Grand Rapids, Mich.; Pearse, W. M., Mt. Vernon, Ind.
Ross, A. A., Hochheimer, Texas.
Sutherland, J. Luc, Grand Island, Neb.; Storer, H. R., Newport, R. I.; Shurly, E. L., Detroit, Mich.; Stevens, B. F., London, England; Stockwell, Miss M. H., New York, N. Y.; Strueh, Carl, Chicago, Ill.; Slagle, Jacob, Portsmouth, Ohio.
Taylor, P. R., Louisville, Ky.; Truax, Charles, Chicago, Ill.; Tussey, A. Edgar, Philadelphia, Pa.
Vogeler, Julius, St. Louis, Mo.; Von Koerber, P. E., Loup City, Neb.
Wilbur, C. L., Lansing, Mich., (2); Wyman, Hal. C., Detroit, Mich.; Woody, S. E., Louisville, Ky.; Williams, H. L., Philadelphia, Pa.